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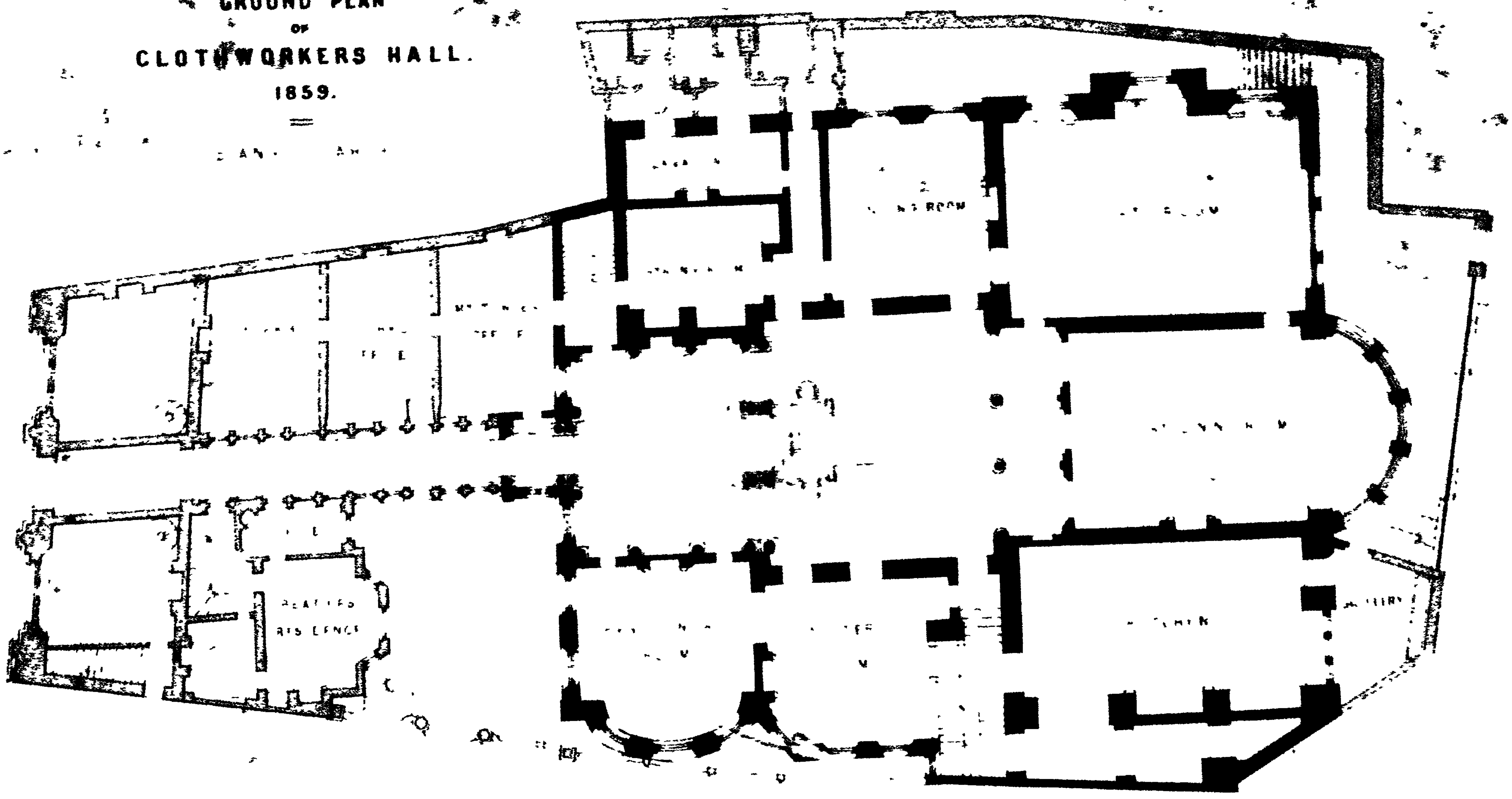
Entire

GROUND PLAN
OF
CLOTHWORKERS HALL.
1859.



HANDBOOK

OF

SPECIFICATIONS:

OR,

PRACTICAL GUIDE

TO THE

Architect, Engineer, Surveyor, and Builder,

IN DRAWING UP

SPECIFICATIONS AND CONTRACTS FOR WORKS AND CONSTRUCTIONS.

Illustrated by Precedents of Buildings

ACTUALLY EXECUTED BY THE FOLLOWING EMINENT ARCHITECTS AND ENGINEERS:

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Preceded by a Preliminary Essay,

FORMS OF SPECIFICATIONS AND CONTRACTS, &c. &c.

And Explained by numerous Illustrations.

BY

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WITH A REVIEW OF THE LAW OF CONTRACTS,
AND OF
THE RESPONSIBILITIES OF ARCHITECTS, ENGINEERS, AND BUILDERS,

BY W. CUNNINGHAM GLEN,

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PART II.

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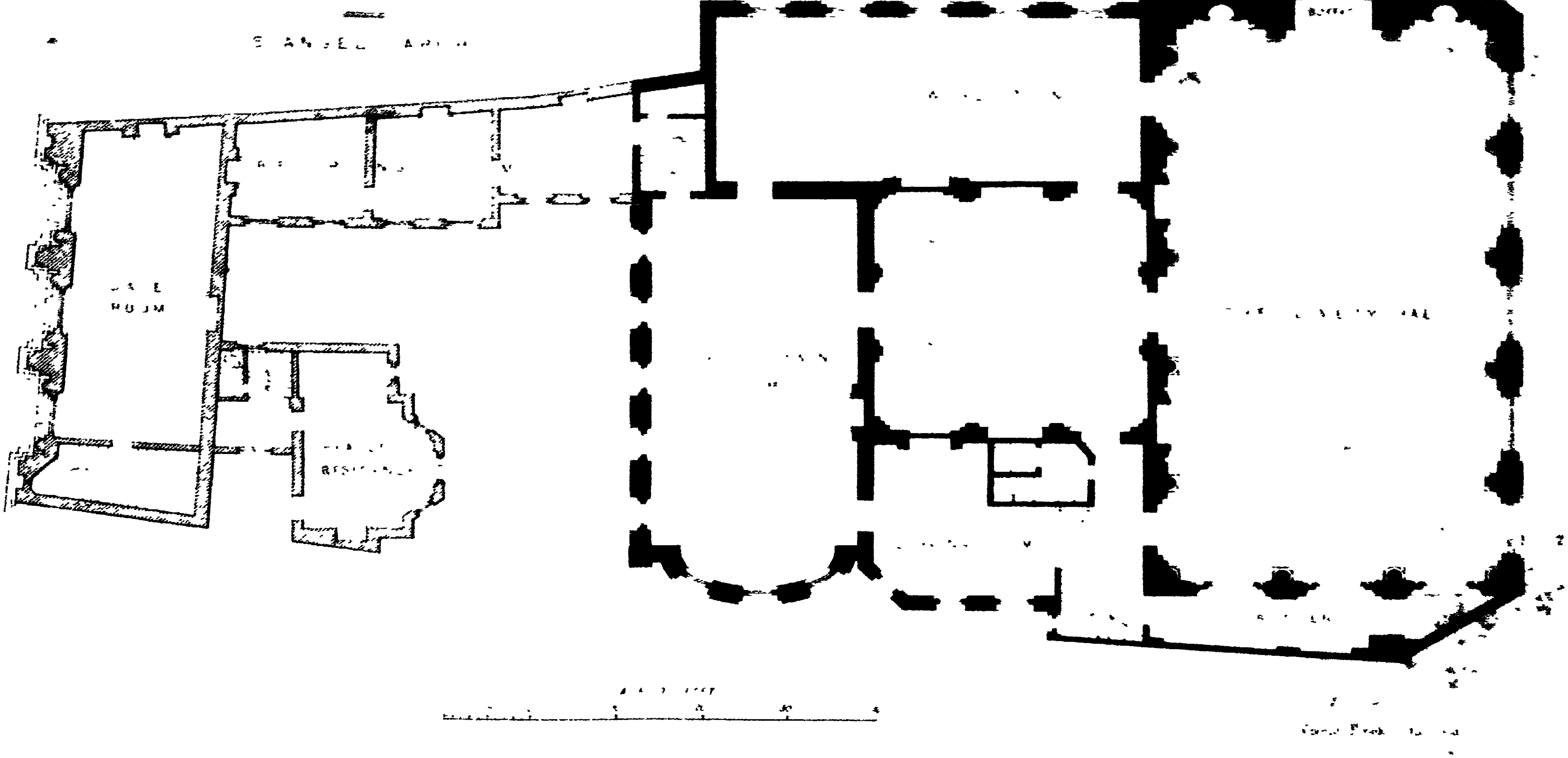
PRINCIPAL FLOOR

OF

CLOTHWORKERS HALL.

1859.



Specification for the Erection and Completion of New Hall and Buildings, &c., *in Mincing Lane, London, for the Worshipful Company of Clothworkers.* Samuel Angell, *Architect.* 1856-9.

N.B.—A Beadle's residence, Clerks' apartments and offices were contained in this Specification; but are omitted, in order to confine this particular specially to the more important details of the apartments attached to the Hall of the Company.—T. L. D.

EXCAVATOR AND BRICKLAYER.

Digging and Shoring.—Those parts of the site at present covered with buildings are to be cleared away by the purchaser of the old materials, together with the vaulting under same. It is therefore to be assumed that the purchaser of the old materials will excavate the entire area of site to an average depth of 3 feet from the present pavement level all over the site. The actual level is therefore to be ascertained prior to the commencement of the excavation by the Contractor, and the greater or lesser quantity found to have been removed by the purchaser of the old materials to be the subject of addition to, or deduction from, the amount of contract, as the case may be. The Contractor is to excavate the whole area below that depth to the depth shown on the sections, properly levelled to receive the bed of concrete.

Execute all *shoring* that may be necessary to any of the adjoining buildings or walls, and securely strut and plank the side of excavation next Mincing Lane, carefully filling in and ramming with earth as the works proceed. Any existing drains or cesspools that may be found on the intended site are to be emptied and filled in with concrete. Remove and cart away the superfluous earth, and all rubbish that may accumulate from time to time during the execution of the works. Provide in estimate the sum of 10*l.* for any works that may be directed for the protection of the *present well* on the site. The Contractor will be held responsible for any damage that may arise from negligence or insufficient shoring.

The *concrete* to be composed of clean Thames ballast and best fresh ground stone lime, and mixed in the proportion of one of lime to six of ballast, the whole to be thrown in to form the bottom from a staging 10 feet clear height above the top surface of the concrete, which is to be 4 feet in thickness over the entire area of site, properly levelled throughout to receive the footings of the several walls. *Fill up the spandrils* of the arches in basement at the level of ground floor with concrete as before described. Also an additional bed of fine concrete, 3 inches in thickness, floated to a level surface to receive the Portland and York pavings on the ground floor. Provide and fill in on the top of concrete a bed of hard dry rubbish and lime core, properly rammed and levelled to receive the paving in basements, and of the depths shown on the section. *Asphalte.*—The *flooring* to the basement of front building next Mincing Lane (except the water-closets) is to be covered with best Bastenne asphalte floor, 1½ inch thick, laid to proper levels on and including a bed of concrete, 6 inches thick, and a layer of fine concrete 1½ inch thick, floated to receive same, also asphalte skirtings round walls, 6 inches high, and ¾ inch thick. *Water.*—The Contractor is to *provide water* for the use of works required for the several trades.

Drains.—Provide and lay to proper falls bedded in the concrete *Jennings' patent tubular earthen glazed drain pipes*, as advertised, and of the sizes shown on the plan of foundations, all to be perfectly jointed in cement, with the necessary bends and junctions complete. Provide and fix where directed No. 43 6-inch syphons, properly jointed and connected with down pipes and drains. The 15-inch main drain is to be properly connected with the sewer in Mincing Lane, including the necessary tunnelling under street, with a *Burton's flap* and frame complete. Give the necessary notices, and pay all fees in connexion therewith.

Materials.—The *bricks* used are to be the very best hard and well-burnt square grey stocks, except where otherwise directed, and in all cases samples of the several description of bricks are to be submitted to the Architect for approval. The *mortar* to be made of the best Dorking stone lime and clean sharp Thames sand from above Bridge, in such proportions as may be directed or approved, and no more to be made up than is necessary for the day's consumption. The *cement* is to be the very best in quality of that known as Roman cement, and to be obtained from Messrs. Francis' works at Vauxhall, and is to be mixed with such *proportions of sand as may be directed or approved.*

Work.—The whole of the *brickwork* is to have a flush joint and neatly struck where directed, and no 4 courses are to exceed 12 inches in height. Execute the brickwork to the several walls, footings, piers, &c., of the thickness and height shown on the plans and sections, together with all the necessary cores and projections required for the Plasterers' works. Two *half-brick rims* in cement are to be turned *over the drain pipes* where needed in footings and foundations. The *vaults* in basement-story are to be covered with arches in 2 half-brick rims in stocks and cement, with all the necessary skewbacks, cutting, &c. Also turn 2 half-brick arches in cement with space for air between iron springers, with the best hard selected bricks rubbed up and set in the most careful manner over kitchen and pantry ground-floor, the soffit of top arch to be rough plastered. The points of the groins are to be formed and neatly cut in second Malms. The springers to arches on iron girders are to be in selected bricks built in and fitted to flanges of same. Turn arches in cement over all door and window openings in 3 half-brick rims, and a double arch to be turned over the folding doors between Waiters' and Pensioners' rooms. Properly cut, render, and form the seats for inverted arches under all openings, and turn 2 half-brick rims in stocks and cement. All the brickwork, as *backing to masonry*, to be executed in cement. Execute 4 courses in cement as bond courses to the several stories throughout as follows :—

Cement Bond Courses.—2 tiers in basement, 3 in ground-floor, 3 in one-pair floor, and 2 additional tiers for the Livery Hall and staircase, and 2 tiers for rooms above that level. Also an additional tier under the floors to receive the chain bond where directed. The *hoop-iron bond* is to be 1½ inch wide and $\frac{1}{16}$ of an inch thick, and to be worked in the cement bond courses properly lapped and rivetted at angles as follows :—1 tier is to be used for every half brick in thickness to the several walls, and 2 tiers in height. Provide and fix, properly rivetted and lapped at angles, *wrought-iron chain bond* 3 inches wide and ⅜ inch in thickness at the level of all the floors. Turn all *trimmers* under hearths (except in basement) in half brick in cement. Execute any chases that may be necessary, and parget same, also any cutting away for and bonding in new with old wall; form all chases or recesses for rain and other pipes. All the *external faces of walls* (except where described to be of stone) to be faced with the *best second Malms*, the perpends kept and chase joints neatly struck. The north and south return walls to be faced to a distance of 14 feet from underside of main cornice. The joints to the cement bond courses to be raked out and pointed with white mortar. All the *external arches* to be *gauged* with the very best cutters.

Build the *sleeper walls* one brick in thickness on one course of 1½ brick footings on top of concrete up to the required height; also to fender walls for hearths, coppers, sinks, stairs, &c. The brickwork under stairs to be in 1½ brick with proper footings. The several internal partitions to be as shown on the drawings, to be brick flat nogged in cement. *Pave* with hard selected stock bricks laid on edge in sand on brick rubbish, and grouted inner edge, throated both edges, and cramped with galvanized iron cramps, run with sulphur. The parapet wall of dressing-room building, next area, and that of kitchen in front, only to be coped similar to the last. The return, or east parapet, of said outbuilding to be similarly coped, but to be 12 inches wide only, and throated one edge. The arch to carry over the flues from Beadle's residence, into back chimney shaft of Mincing Lane building, to be coped with 4-inch tooled Portland coping, 27 inches wide, throated both edges and cramped, and run with sulphur. The remainder of the parapets not in sight are to be coped with 3-inch tooled York coping, throated both edges where necessary, of sufficient width to project 2 inches on each edge over the face of the brickwork, to be set in cement, and cramped and run with sulphur as before. The capping of the flues from the dressing-room chimneys to be of 4-inch tooled York, 27 inches wide, throated, cramped, and set in cement as to the copings.

The *steps* to the three entrances from Mincing Lane, those from the lower to the upper level of the floor of covered way, those from the covered way into the apartments on each side of the same, and to the porch at end, and those from the covered way into the yard next Beadle's residence, to be of best Portland stone, as before described; each step to be in one length, and the whole to be wrought, rubbed, notched, and set on brickwork in the best manner, as shown on drawings, and with such mortice holes or dowel holes in same as may be requisite for the doorcases.

Paving.—The *paving* of entrance gateway and covered way and porch to be of 3-inch rubbed Portland, cut to the sizes and pattern shown on the drawings, and to be rubbed, jointed, and set in putty on a fine bed of concrete, floated to level surfaces. Each division, as shown on drawings, to be in one stone. One of the steps from lower to upper level of covered way to be sunk out and rebated to receive gratings 12 inches × 4 inches, and 3 bronzed ornamental gratings to be provided and fixed in same with the requisite flanges. The yard between Beadle's residence and main building is to be paved with 3-inch rubbed Portland stone in lengths of about 6 feet, and to be properly jointed and set on concrete, as before described to the required falls.

The *area walls* of Beadle's residence and Porter's rooms to be set with tooled Portland saddle-backed kerb, 9 inches × 8 inches, properly jointed, double plugged, and run with lead, and set in cement. The spandril at end next covered way to be also executed in Portland to correspond. The *kerb of yard, &c.*, next Dunster Court is to be of Portland, 1 foot 6 inches × 9 inches, with

No. 5 standard stones, each 18 inches × 9 inches, all to be wrought, rubbed, and jointed, and double plugged, and run with lead. Immediately under the kerbs of areas aforesaid is to be provided and set in cement ¾-inch *sawn slate drip* 6 inches wide.

The *paving* of the entrance-hall, stairfoot, and space and lobby behind stairs to be of 3-inch rubbed Portland, in sizes according to the drawings, and in every respect as described for the covered way. The floor of passage to kitchen next the stairs to basement to be of 4-inch *rubbed York landings*, tooled on the underside, properly cut and pinned into walls, and joggled and run with cement at the joints. The lobby to same and the kitchen, scullery, and appurtenances, to be paved with 2½-inch *rubbed York paving*, in parallel courses, jointed and laid on fine concrete, as described for Portland paving. The *steps* down to kitchen level to be of *solid York*, 14 inches × 7 inches, properly rubbed and back-jointed, and in one stone each step. The open areas on the north, east, and west sides of the several buildings are to be laid with 2½-inch *tooled York paving* in regular courses, bedded in mortar, jointed in cement on concrete.

The several doorways from areas to have solid tooled *York steps or sills*, 6 inches thick, and of the required width, all properly set, cut, and pinned and morticed for the doorcases. The several *steps* down to the areas to be of solid York, 13 inches wide and of the required height, all to be tooled on the top and front, back jointed, and set. The lobby to Clerks' water-closet in basement is to be *paved* with 2½-inch tooled York paving, as before described. The openings throughout the basement story are to have 6-inch tooled *York sills* of the respective widths of the thicknesses of walls.

Caen Stone.—The several columns and the square pilasters, together with the attached columns, ¼ columns, &c., of the entrance-hall, staircase, and lobby behind same, the columns and pilasters between the porch and entrance-hall, the entablatures over each of the coupled columns at foot of stairs, the several portions of dado coloured brown on the drawings, the several pedestals or stylobates under the said columns, the blocks at foot of stairs, and the pilasters, pedestals, plinths, balustradings, and cappings of the grand staircase, the stone chimney at end of corridor behind the grand staircase, the springs and newels of the staircase, the dies of the balustrading, the plinths of the balustrading round one-pair landing, and the several works of the entrance-hall, staircase, and one-pair landing (not before described, but coloured brown on the drawings to indicate stone) are to be executed in the very best Caen stone, free from all imperfections, and to be wrought, rubbed, rebated, moulded, and fashioned into the various forms shown on the drawings, and to be cramped or plugged and run with sulphur, as before described.

The *handrail capping* to balustrade and newel caps are all to be executed in the *best dove marble*, and to be worked, moulded, polished, jointed, and dowelled together with copper dowels, and left clean, bright, and perfect at the conclusion of the works. The *balusters* of the staircase only are to be of the best *Derbyshire alabaster*, neatly and truly turned and polished, with copper dowels top and bottom, and half balusters where shown on drawings. The *steps and landings* of the grand staircase to be of best *Portland*, all as shown on drawings; the centre part of bottom step to be 10 feet 3 inches long, in one piece. The remainder of the steps to be spandril-shaped, extreme size about 14 inches × 8½ inches, all to be wrought and rubbed with moulded nosings and fronts, and to be set perfectly level and bird's-mouth back jointed together. The *landings* forming floor of one-pair landing, and the half spaces at head of first flight, are all to be in large stones 7 inches thick, wrought and rubbed, joggled together at the joints, cut and pinned in cement where needed, and set perfectly level. Those where soffits are intended to form the ceilings are to be rubbed on the soffit.

Marble Work, &c.—Pedestal course at circular bay window of Court Dining-room to have black and dove marble plinth, Haytor granite die, dove marble cornice, with 2-inch marble slab on ditto, of the various heights and widths and with the splays, mouldings, &c., shown on detail drawings, and highly polished : the joints cramped and dowelled with copper in the best manner; similar pedestals to be fixed under Persian figures adjoining. Haytor granite moulded and *polished bases*. Red Peterhead or red Aberdeen *granite* polished *shafts to columns* in one length, 11 inches at lower diameter, and Carton pierre capitals as before described. Slate dowels, 1½ inch × 1½ inch and 2 inches high.

Pedestal course round Livery Hall to have *black marble plinth*, Haytor granite dies under granite columns. Babbicomb Bay marble stylobates and dove marble cornice of the various heights and beds, and with the splays, mouldings, &c., as shown on detail Drawing No. 31; all with highly polished faces, the joints with copper dowels ½ inch square and 2 inches long, run with cement and secured to brickwork with copper cramps. Provide and fix No. 12 red Peterhead or red Aberdeen granite shafts 1 foot 10½ inches lowest diameter and 16 feet 6 inches high in one length, and showing ¾ face, and with small moulding at base and necking worked on same. No. 2 similar shafts to internal angles, and No. 2 similar shafts to whole columns, and 2 similar shafts to ¾ pilasters with Haytor granite moulded bases, the whole to have highly-polished faces, slate dowels at beds, 3 inches × 3 inches × 4 inches long, and secured to the brickwork with galvanized iron cramps 18 inches long, turned down on the iron-chain bond. Fix *Caen stone capitals*, and provide for carving same the sum of 386*l.* prime cost, including modelling. This sum to be expended as the Architect may direct. The capitals to be varnished three times with the best copal varnish. Note.—For alabaster balusters and dove marble handrail see preceding description of staircase.

Chimney-pieces.—Provide veined marble plain box chimney-pieces to Pensioners' and Waiters' rooms, Sewing-room, and Musicians' rooms over, with mantle and jambs 7 inches wide, and shelf 1¼ inch thick and 10 inches wide. The Court Dining-room and Court room to have marble chimney-pieces of the value of 25*l.* each, with extra wide marble shelves in window recess of Court room. The Binding-room to have a plain box black marble chimney-piece with mantle and jambs 9 inches wide, and 1½-inch shelf 12 inches wide. The Court Drawing-room to have No. 2 marble chimney-pieces of the value of 25*l.* each. The Livery Drawing-room to have No. 2 marble chimney-pieces of the value of 20*l.* The Livery Hall to have No. 2 marble chimney-pieces of the value of 25*l.* each. The principal staircase to have a marble chimney-piece value 20*l.* The entrance hall to have No. 2 marble chimney-pieces value 15*l.* each. The whole to be fixed with cramps and plaster in the best manner, and to have 2½-inch firestone back hearths, and 2½-inch rubbed Portland front hearths, 18 inches wide and 18 inches longer than the several openings notched for chimney-pieces. The hearths to Livery Hall to be of the size shown on plan.

Strong Room.—To be paved with 2½-inch rubbed York in parallel courses bedded in mortar, and jointed with cement on a bed of fine concrete 3 inches thick.

The door jambs and head for iron doors are to be of York stone rubbed on faces, the jambs 11 inches × 9 inches, the head 9 inches × 6 inches, sunk for iron frame, and fixed with slate dowels and cement, 4-inch rubbed York door sills. The gallery to be formed with 4 inches rubbed both sides York landings, with fair rubbed front edge and joggle joints and cement, cut and pinned or built into wall 4½ inches.

Lavatories.—Inch veined marble tops (polished) to *washing tables* with rounded edges and holes, cut and rebated for basins;

¾-inch *veined marble skirtings* 5 inches high, fitted to rebate in marble tops and with polished quadrant ends.

The *staircase* from ground-floor up to *Musicians' room* to have York rubbed spandril steps, *with moulded* nosings and splayed rabbets. Winders to correspond similar to previous staircase. 4-inch rubbed York landings and risers under cut and pinned in with cement, the ends of steps in Waiters' room to be plain rubbed, the others where exposed to view to have return mouldings, mortices, and running with lead for iron balusters and newels. The *kitchen fire-place* to have stone jambs, mantle and shelf, value 5*l.*

Templates and Corbels.—The columns in basement to have 6-inch York bases, 18 inches × 18 inches, tooled with small chamfered edge sunk for plate of column. The springing girders to arches to have 3-inch tooled York templates, 18 inches × 9 inches, with tooled edges. The iron girders to floor of Livery Hall to have 6-inch tooled York templates, 24 inches × 18 inches, sunk for rivets of girders. 4-inch tooled York templates 18 inches × 14 inches (averaged) under ends of iron girders and tie beams, &c. The iron corbels under pedestal course in Livery Hall to have granite templates 2 feet 3 inches wide and 12 inches thick. Provide and fix *granite landings* over columns at bay of Court room to carry columns of Livery Hall 12 inches thick, and 3 feet 6 inches × 6 feet 3 inches. Provide *granite templates* 12 inches thick, the full thickness of wall under wrought-iron girders at west wall of Livery Hall, with fair *face* on outside forming string, and 3-inch tooled York covering. Provide granite templates 2 feet 7 inches × 2 feet 7 inches, and 12 inches thick under iron girders at recesses at north end, with 3-inch tooled York cover on same as last. Provide 4-inch tooled *York templates* 18 inches × 18 inches under iron columns in Court room. The iron girders over opening to lobby of Court Dining-room to have 12-inch *tooled York templates* 27 inches × 24 inches. The girder at foot of principal staircase to have 6-inch ditto, 27 inches × 18 inches, and 4-inch tooled York cover to the above girders.

Provide (to be deducted if not used), 1000 feet cube Portland stone, including hoisting and setting, 500 superficial, 3-inch York tooled paving to be used in cores, &c. Provide for making good the street paving and kerb, the prime-cost sum of 20*l.* Cover up and protect from damage all exposed parts of masonry with proper deal casing or tiles, and cement and clear away same, and leave the stonework clean and perfect at the completion of the works.

CARPENTER'S WORK.

Materials.—All the *fir timber* to be of the best description and quality, either from Memel, Riga, or Dantzic. The *deals* to be equal to the best Petersburgh. The whole to be thoroughly seasoned and free from sap, shakes, and large or loose knots and other defects.

No joists, ceiling joists, or timbers to flats, to be more than 12 inches apart, nor the purlins to roofs more than 3 feet apart.

Roof over Livery Hall and over Front Building next Mincing Lane, and all the other parts to be constructed in the manner shown by the detail drawings to ½-inch scale, and in accordance with the scantlings, and particulars more particularly written thereon.

Generally to all the Roofs and Flats.—Cover the several roofs with 1½-inch boarding for slates, carried down below the gutters sufficiently to receive the ends of gutter bearers. Cover the flats with 1¼-inch boarding, edges shot for lead and with diminished firrings. The gutters to be 1¼ inch, with all requisite strong framed or bridged bearers, rebated drips, rounded rolls, and dovetailed cesspools, and to be laid with a fall of not less than 1½ inch in 10 feet, and to have 2-inch drips. Deal rounded rolls for lead 2½ inches × 2 inches, and 2½-inch rounded hip and ridge roll, saddled on. Proper deal fillets to all eaves and rakes of slating.

FLOORS.

To Front Building next Mincing Lane.—Joists to ground-story 5 inches × 2½ inches; trimmer for circular stairs 5 inches × 3 inches; sleepers 4 inches × 3 inches, and 4 feet 6 inches apart; joists to mezzanine two-pair and three-pair stories 12 inches × 2½ inches; trimmers and trimming joists 1 inch thicker; end joists as abutments for strutting 12 inches × 4 inches; two tiers of strong herringbone strutting on each of the last stories, with a ⅞-inch wrought-iron tie bolt to each tier of strutting, with heads, nuts, and washers, and screw unions, the bolt fixed through the joists; joists to landing on mezzanine floor 7 inches × 2½ inches, and on two and three-pair stories 8 inches × 2½ inches; trimmers 8 inches × 3½ inches; No. 1, ⅞-inch tie bolt to each landing to connect trimmer with timbers of partition. The joists of rooms to be secured to wall with No. 48 wrought twisted dog irons 2 feet 3 inches long, 2½ inches × ⅜ inch (one to every fifth joist), one end caulked to joists, and fixed with a coach head screw and staple; the other end let into wall, and turned down to clip over chain bond. *Livery Hall.*—No. 10 fir binders 13 inches × 6½ inches, with 4-inch tooled York templates 2 feet × 1 foot 2 inches at ends; bridging joists excepting over kitchen, 9 inches × 3 inches; ceiling joists, 4 inches × 3 inches; joists on brick arches over kitchen, 7 inches × 3 inches; bearers for ceiling joists under chimneys, 9 inches × 6 inches; joists to pantry at end of hall, 9 inches × 3 inches; plates, 5 inches × 4 inches. *Floors of Rooms on Ground-story under Livery Hall.*—Joists, 4 inches × 3 inches; sleepers and plates, 4 inches × 4 inches. *Floor of Court Drawing-room.*—No. 2 binders 10 inches × 4 inches, to floor over Binding-room with 4-inch York templates; plate on cross wall, 9 inches × 4 inches, and joists, 9 inches × 3 inches; similar binder next wall of staircase; plate for ceiling joists, 6 inches × 4 inches; and ceiling joists 4 inches × 2½ inches; sleepers over strong room, 4 inches × 3 inches, and plates, 5 inches × 4 inches; joists over strong room, lavatory, and passage, 7 inches × 2½ inches; trimmers, 7 inches × 3 inches. *Floor of Livery Drawing-room, &c.*—No. 3 binders, 10 inches × 4 inches; bridging joists, 9 inches × 3 inches; plates on cross walls, 6 inches × 4 inches; ceiling joists, 4 inches × 2½ inches. Joists to floor of *serving-room* one pair, 9 inches × 2½ inches; trimmers and trimming joists, 9 inches × 3 inches. Joists of similar scantling to floor of Musicians' room with one tier of herringbone strutting to each room. Joists to *Pensioners' and Waiters' rooms*, and lavatories, water-closets, and dressing-rooms on ground-story, 4 inches × 3 inches; fir sleepers, 4 feet 6 inches apart, 4 inches × 3 inches. ¾-inch sound boarding with double fillets to floor over lavatory and passage ground-floor. Joists to *Musicians' gallery* to be 10 inches × 2½ inches, with fir-framed trimmer, 10 inches × 4 inches on 4-inch York templates, 12 inches × 18 inches. To *water-closets* 4½ inches × 2½ inches; sleepers, 4 inches × 3 inches; to Porters' room, joists 5 inches × 2½ inches, and sleepers, 4 inches × 3 inches.

Quarter Partitions for Bricknogging.—The quarters to be not more than 18 inches apart. The partition in the *front building* side of staircase to be constructed with a queen truss at top, tie beam 10 inches × 5 inches, principals 7 inches × 5 inches, straining beam 7 inches × 5 inches, 4-inch tooled York templates, 14 inches × 12 inches, under ends of tie-beam, 2 cast-iron queen heads to truss, weight 56 lbs. each, and 2 wrought-iron heel straps, 3 feet 6 inches long, 2½ inches × ½ inch, fixed with coach head screws and staples, 1¼-inch wrought-iron queen bolts, with nut and large washer, and flattened head with keys and wedges. No. 2 inch wrought-iron tie bolts, with heads, nuts, and large washers to connect intertie or tie beam of truss with the remaining heads and sills. Head to partition on three-pair story, 7 inches × 5 inches; sill *to partition on three-pair*, forming also head to that on two-pair, 8 inches × 5 inches. Sill and intertie to *partition on two-pair story*, 8 inches × 5 inches, and similar sill *on mezzanine*. Posts 5 inches × 4 inches, quarters and puncheons 5 inches × 2½ inches. Door heads 5 inches × 4 inches. Braces 5 inches × 3 inches. Nogging-pieces 2 feet apart, 4½ inches × 2 inches. The *return partition* to fill in small portion of semicircular window on mezzanine story to have sill and post 4 inches × 4 inches. Circular head 4 inches × 4 inches, net and quarter 4½ inches × 2½ inches. 3-inch tooled templates, 12 inches × 9 inches, under ends of sills. No. 2 *fir girders* across window openings of mezzanine to carry joists, 12 inches × 12 inches, sawn, reversed, and bolted with No. 5 ⅞-inch screw bolts to each, and 2 feet 6 inch templates, 18 inches × 14 inches, under ends. Deal rough fillet, 3 inches × 2 inches, spiked on, and No. 1 cast-iron shoe, weight ¾ cwt., to receive sill of partition on mezzanine, bolted to girder. The *remaining partitions* to have heads and sills, 4 inches × 4 inches. Door and corner posts, and door heads, 4 inches × 4 inches. Quarters and puncheons, 4 inches × 2½ inches. Nogging pieces, 2 feet apart, 4 inches × 2½ inches. Braces where requisite, 4 inches × 2½ inches, and stout framed bridgings between joists, where they run in the same direction as the joists. Wherever the ends of joists or timbers to partitions adjoin flues, they are to be carried on 2½-inch rough York corbels, 9 inches × 9 inches.

Ventilator over Clerks' Offices.—To be formed in the manner shown by the detail drawing to an inch scale, with fir side 12 inches × 4 inches, and front 7 inches × 4 inches, cross pieces 7 inches × 4 inches, all wrought and framed. Deal wrought all round, framed and splayed kerb, 5 inches × 2 inches, with blockings under. 1¼-inch boarding for lead in batten widths, wrought on the underside, rebated and beaded, and 2-inch rounded roll for lead. The side of ventilator secured to iron girder, with No. 11 blockings fitted in between top and bottom flange, and bolted through with ⅞-inch screw bolts. Joists for flat in recess, 7 inches × 2½ inches, and ceiling joists under, 5 inches × 2½ inches; the flat covered with 1¼-inch rough boarding for lead, and with rolls. 1½-inch deal bracketting for cove, and 2-inch framed cradling to soffit of girder, 1¼-inch deal wrought staff beaded and grooved fascia. Deal moulded cornice 11 inches girth; deal moulded fillet, as soffit, to side bearer, 3 inches × 2 inches, moulded 4½ inches girth, and rebated for plaster; deal moulded fillet under glass, 2½ inches × 2 inches, moulded 3½ inches girth and fitted in. Deal moulded and mitred fillet as margin to ventilating panels, 2¼ inches × 2 inches, moulded 3½ inches girth, and cast-iron ornamental foliated panels, No. 10, of ¼-inch metal fixed with screws, holes, drilled and countersunk. *Ventilator over covered way to hall* to be formed with fir sides, 9 inches × 4 inches, with ⅝-inch wrought-iron straps, 2 feet long, 2½ inches wide, fixed with coach head screws, and let in flush over scarfs, cross bearers 7 inches × 4 inches. Shape bearers to flat, 5 inches × 3 inches, all wrought and framed, 1¼-inch wrought one side boarding for lead in half-board widths, ploughed, tongued, and beaded, and with rounded ridge and short rolls. No 19 cast-iron foliated panels as last, and with moulded margin and moulded fillet to glass, as described to last ventilator; the ends of ventilators and quadrant lights to be finished with ⅞-inch deal staff-beaded soffit, bent circular, with deal blockings wedged in between end bar and wall, and circular deal moulding under same 6 inches girth, ½-inch deal circular lining on outside for dressing lead over.

Generally.—*Fir lintels* to all openings 18 inches longer than the openings of the required width, and 4 inches thick; those to openings of greater lengths than 4 feet, 6 inches thick. The lintels to internal openings to be the full width of the walls. A sufficient number of *wood bricks* to be provided and fixed for the Joiners' work to doors, and windows, and skirtings. Provide all *centering, turning-pieces,* strutted centering to stone arches, feather-edged springing pieces for trimmers, blockings, and other similar work requisite for the performance of the Bricklayers' and Masons' trades. 1½-inch deal *framed cradling,* with stout rough fillets to soffit of iron girder in waiting-room, and to all other girders where seen in plastered rooms. For other bracketting and cradling, see Joiner and Plasterer's Specification.

Trusses under Cants of Octagon Dome.—Fir-framed top and bottom plates of trusses to cants under dome to be 6 inches × 4 inches. Principals, posts, and straining-pieces 6 inches × 4 inches, quarters 6 inches × 2 inches. No. 2 1-inch wrought-iron tie bolts to each truss, with ½-inch wrought-iron butment straps fixed with keys and wedges. The plates to be on 4-inch York templates 18 inches square. Fir-framed ceiling joists, 4 inches × 2 inches, to form false ceiling to closets on the north side of staircase, with deal fillet, 2 inches × 2½ inches, spiked to wall.

Allow for all such *temporary sashes* and enclosures to doors and windows as may be required for the execution of the works. *Provide* in estimate (to be deducted if not used), at the rate of price on which the contract is based, as follows:—500 feet cube fir sawn into such scantlings, and framed and fixed as may be directed by the Architect.

SLATER'S WORK.

Cover all the roofs with the best Bangor duchess slating, laid with a 2½-inch lap, and copper nailed, 2 nails to each slate, the eaves laid double.

1½-inch, sawn both sides, Bangor slate slabs, 3 feet × 8 feet 5 inches for *divisions in wine-cellars*, the outer edge rounded; the top fitted to form of arch, the bottom fitted into a tooled York kerb, 5 inches × 4 inches, grooved for divisions, and the back edge cut and pinned with cement (No. 20 of these divisions in all).

¾-inch, rubbed both sides, *slate top to washing-basin*, in lobby to Clerks' water-closet in basement; the front edges rounded, and with rounded corner; the back edges cut and pinned, and with rebated perforation for washing-basin, ½-inch rubbed slate skirting, 5 inches high, tongued to groove in slate top.

½-inch sawn *slate drips*, 6 inches wide, pinned into brickwork, under stone kerbs for railings, and on top of cementing to old walls in areas as a weathering.

Leave all the slating sound and water-tight at the completion of the works.

JOINER'S WORK.

The *deals* to be equal to the best description, and thoroughly seasoned and free from sap, shakes, and large or loose knots, or other defects.

FLOORING.

Front Building.—To have 1¼-inch yellow batten *straight joint floors*, edge nailed and tongued headings. The other rooms, lavatories, water-closet and passages adjoining, on ground-floor, to have 1½-inch yellow deal straight joint floors, tongued with galvanized iron, and tongued heading joints. *Court and Livery Drawing-rooms.*—1½-inch yellow batten straight joint floor, tongued with iron and tongued headings. *Livery Hall.*—1½-inch yellow batten straight joint floor, edge nailed and tongued headings, and inch-pitch pine wrought floor, in 3½-inch widths, dowelled and edge-nailed, and cross-tongued heading joints upon same, except in pantry and recess at north end, and which will require firring up to bring to same level as adjacent floor. *Serving-room, Water-Closets, &c., and Mezzanine over.*—To have 1½-inch straight joint floor, yellow deal, tongued with iron and splayed headings. *Note.—All hearths to have deal mitred borders around.*

SKIRTINGS.

Front Building.—The three and two-pair floors to have inch deal, sunk, double moulded, and rebated plinth, 13 inches high, tongued to floor, with moulding on same, 6 inches girth out of 4½ inches × 2 inches, narrow grooved grounds, tongued at angles, and dovetailed to door grounds. Keene's cement dado, 1 foot 8 inches high, surbase of 1¼-inch deal rounded capping 4½ inches wide; 1 inch deal moulded fascia; bed mould to ditto out of 2½ inches × 1½ inch; deal moulded fillet out of 2 inches × 2 inches on top of capping, the whole fixed with proper narrow grounds and backings, with tongued and mitred internal angles; crosstongued mitred external ditto, housed to architraves of doors, and scribed at chimney-pieces, as detail drawing. 1-inch moulded plinth and grounds, as above, to offices, ground-floor water-closet, and landing of mezzanine; that on deal partition to be wrought both sides (without grounds). Inch deal sunk and moulded skirtings, 11½ inches high, tongued to floor, the moulding 4 inches girth; grounds, backings, mitres, &c., as before to offices in mezzanine. Inch square skirting, 7½ inches wide, with narrow grooved grounds to water-closets in basement. *Pensioners' and Waiters' Rooms, &c.*—To have inch deal, sunk, double-moulded and rebated plinth, 13 inches high, tongued to floor, with moulding on same, 6 inches girth; grounds, &c., as before. The water-closet and lobby adjoining to have inch deal double-faced and moulded skirting, 11 inches high, tongued to floor; grounds, &c., as before. Similar skirting to passage and lobby adjoining Binding-room, and 1-inch torus skirting, 9 inches high, tongued to floor, grounds, &c., to water-closets and dressing-rooms adjoining lavatories. *Court Dining-room.*—To have inch deal, sunk, double-moulded and rebated plinth, 11½ inches high, tongued to floor, with moulding on same, 6 inches girth, out of 4½ inches × 2 inches, narrow grounds, &c.; Keene's cement dado 1 foot 3 inches high; deal moulded surbase, 1 foot 4 inches girth, and grounds at back. The whole to correspond with the marble pedestal course at bay. *Court Room.*—To have 1-inch deal rebated plinth, 8 inches high, tongued to floor, and moulding tongued on same, 7 inches girth out of 4½ inches × 1½ inch, making together a plinth 11 inches high, from floor with narrow grooved grounds and backings; Keene's cement dado, 2 feet high; deal moulded surbase, 11 inches girth, and grounds at back. *Binding-room.*—To have plinth, dado, and surbase similar to that described for three and two-pair floors of front building. *Court Drawing-room.—To have inch deal rebated plinth, similar to Court-room.* Keene's cement dado, 1 foot 10 inches high, and deal moulded surbase, 12 inches girt and grounds at back, with Carton pierre ovolo enrichment 4½ inches girt; the terminations to surbase next doors to be formed with deal solid carved scroll and enriched ends.

Livery Hall.—To have marble pedestal course—*vide* Mason. The Pantry to have Keene's cement, flush beaded skirting 10 inches high.

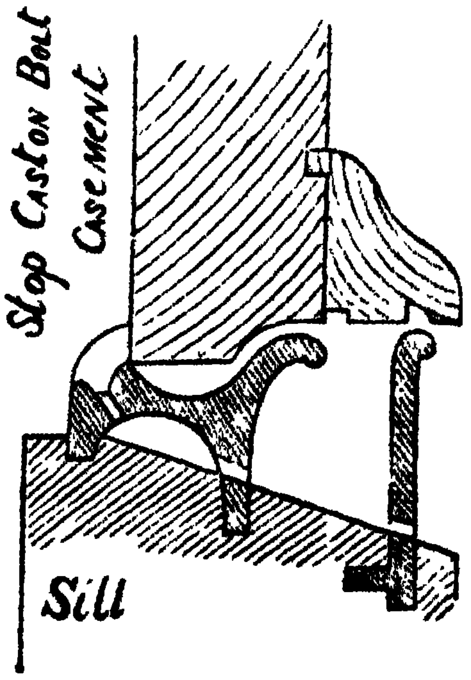
Livery Drawing-room.—To have inch deal rebated plinth, similar to Court-room. Keene's cement dado, 2 feet 1 inch high, and deal moulded surbase 10 inches girth, and grounds at back.

Serving-room, Water-closets, &c., and Mezzanine over, with Music Gallery.—To have Keene's cement, flush beaded skirting, 10 inches high.

The *principal staircase* to have deal torus plinth 8 inches high. Keene's cement, dado and deal surbase, as shown on detail drawings.

WINDOWS AND FITTINGS GENERALLY.

Front Building.—The windows of third and second floors to have 2½-inch finished wainscot, moulded and rebated *French casements*, with semicircular fixed heads; splayhook rebate, and bead, and wainscot moulded fillet at meeting stiles, and rebated and rounded tongue on hanging stiles of casements; 4-inch strong brass butts; ⅞-inch brass espagniolette fastenings; 9-inch brass cabin hooks and eyes; the casements to have wainscot weather board out of 2¾ inches × 1¾ inch; twice throated, moulded, 3½-inch girt and screwed on. Wainscot double-sunk, weathered, grooved, throated, and beaded sills, 5 inches × 4 inches; galvanized iron tongue, 1 inch × ¼ inch; *galvanized iron water-bar*, as sketch; fixed with white lead upon sill and bottom rail of sash; wainscot grooved, beaded, and staff-beaded frame, 5 inches × 4 inches, rebated and hollow grooved tongue on casement at hanging stile. The casements, &c., to have brass bronzed moulded shifting stop for plate-glass, fixed with brass screws, 12 inches apart, and countersunk holes.



The whole to be executed as per detail drawing, and elevation of front, in Mincing Lane. 1¼-inch deal rounded and cross-tongued window board and bearers; the upper moulded fillet of surbase to be continued on window boards. Wainscot plinths 8 inches × 8 inches, and 4 inches thick, hollow sunk on face, plugged to wall under cement architraves to windows.

(*See Plasterer for cement jambs and architraves*).

Fill in *loopholes* to light staircase with pieces of plate glass ¼ inch thick, 15 inches long, 3 inches wide, and let into groove of stonework with oil cement. 1¼-inch deal window board, cross-tongued and rounded with bearers to splayed openings of water-closets. The *window-opening* in back wall of second floor to have wainscot-cased frames, oak, sunk and weathered sills, 4 inches thick; 1¼ inch pulley stiles; ¾-inch outside and 1-inch inside linings, ½-inch back lining and 2-inch heads; 2-inch (finished) moulded sashes, double hung with very strong patent lines, strong brass axle pulleys and dead weights; the beads to be tongued in and rebated in the best manner; brass spring roller, sash fastening, plinths, cement linings, &c. Window-board and moulded fillet as before described.

Pensioners' and Waiters' Room and Kitchen.—The No. 5 window openings in Pensioners' room to have 2½-inch finished *wainscot-moulded French casements* and semicircular fixed heads, with double-margined stiles to match casements, and similar fastenings, frames, &c., to those described for front building; 1¼-inch wainscot, tongued, rounded, and cross-tongued window board and bearers, with wainscot wrought fillet out of 2½ inches × 1½ inch, and moulded hollow to ditto, grooved for plaster. Keene's cement jambs and architraves. (*See* Plasterer.) *Waiters' Room.*—To have deal-cased frame, oak sunk and weathered sills, and 2-inch moulded sashes, brass axle pulleys, patent lines, and iron weights. The frame in 3 compartments, the sashes double hung. Similar frame and sashes in water-closet adjoining, and in kitchen and scullery under brass roller sash fastenings, 1¼-inch tongued and rounded window board and bearers, inch tongued and beaded linings on splay, inch framed and grooved grounds, deal architrave moulding 4 inches girt. Put No. 3 sets of lines and pulleys with hooks to open sashes in Waiters' room, 1¼-inch tongued and rounded window board and bearers, inch tongued and rounded linings and backings to scullery windows. *Lavatories.*—Deal-cased frames, oak sunk and weathered sills and 2 inches deal moulded sashes, &c., as before described, brass sash fastenings, 1¼-inch tongued and rounded window board and bearers, fixed splaying, inch tongued and staff-beaded linings on splay and backings, lines, pulleys, and hooks to open and shut sashes.

Windows in Arcade.—Wainscot-cased frames, oak plain-wrought sills rebated, 4 inches girt, bedded in groove of stone, 2 inches finished wainscot moulded sashes, double-hung, brass axle pulleys, patent lines, and lead weights, with quadrant corners filled in to top rail of sashes, brass roller sash fastening; the frames fixed to stonework with 2½-inch screws driven into lead plugs in stonework; wainscot wrought and moulded fillet, 1½ inch × 1½ inch, screwed on round frame on inside, the whole as per detail drawings. The 2 *window openings on west side of hall*, looking into the Clerk's office and opposite, to have similar casements, fastenings, and frames, as those described to front building and corresponding with Pensioners' room; 1¼-inch deal tongued and rounded window board and bearers, with deal moulded fillet under, and Keene's cement, staff-beaded jambs and soffit to opening looking into the Clerk's office; no water-bar or weathered fillet will be required for this opening. Linings, &c., to opening. (*Vide* Plasterer.)

Court Dining-room, Court Room, and Binding-room.—To have *wainscot cased frames*, oak sunk and weathered sills, 2½-inch *wainscot moulded sashes*, double-hung brass axle pulleys, patent white lines, and lead weights; brass patent roller sash fastenings, cut moulded ends to stiles, galvanized iron tongue as before to sill. The Court Dining-room to have wainscot wrought fillet out of 2 inches × 2 inches, moulded 3½ inches girt next marble top. The *triplet window* in Court-room to have No. 2 1¾-inch clean deal pilasters, fluted on face, with spherical stoppings, deal moulded cap and base, fixed to stone mullions with 2-inch screws into dovetailed lead plugs of stonework, wainscot wrought and tongued square fillet, 2 inches × 1½ inch, fixed with brass screws and sockets at level of sills, as detail drawing. The *other windows* in this room to have 1½ inch wainscot tongued and staff-beaded linings on splay and backings; the wide linings framed in 2 moulded panels, with flush bead let into middle rail of jambs; inch wainscot framed and grooved grounds 6 inches wide, and wainscot moulded architraves 14 inches girt, cross-tongued at mitres. The *central window* to have 1½-inch wainscot wrought and moulded window board and bearers, with wrought and tongued fillet under, 2 inches × 1½ inch, moulded 2 inches girt; the marble shelf of chimney-pieces to go the whole depth of recess and up to the sill of window frame.

The *Binding-room* to have 1½-inch wainscot moulded, 2-panel window backs, with wide bottom rail tongued to floor, and flush bead let into ditto to form skirting. Wainscot moulded capping and bead mould to correspond with surbase of room. Similar moulded linings, grounds, and architraves to those in Court-room, with plinths 8 inches × 8 inches and 4 inches thick, sunk and splayed on face. The sashes to have lines and pulleys to open and shut same. *Court Dining-room* to have 2½-inch wainscot casements, semi-heads, fastenings, frames, &c., similar to those described for front building. Keene's cement linings, &c. (*Vide* Plasterer.) *Livery-hall.*—The window openings to have oak wrought, framed, sunk, weathered, throated, and staff-beaded sills, 8 inches × 5 inches, with iron tongue as before, and oak wrought, framed, staff-beaded frames, 6 inches × 5 inches, to receive iron sashes, &c.; the frames to be secured to brick reveals by holdfasts and cement reveals. The *Pantry, Music Gallery, passages adjoining, also Serving and Music-room over*, to have deal-cased frame, oak sunk and weathered sill, 2-inch moulded sashes, double-hung, brass axle pulleys, patent lines, and iron weights, with brass sash fastenings and cut moulded ends to stiles. 1¼-inch 2-panel moulded window back, with wide bottom rail, flush bead let in to form skirting. Deal narrow-tongued and beaded capping, Cement linings. (*Vide* Plasterer.) The Serving-room and Music-room over to have 1-inch deal-tongued linings on splay and backings, 1-inch framed and grooved grounds, 4½ inches wide, and deal architrave moulding 6 inches girt.

Livery Drawing-room. — 2½-inch wainscot French casements, semi-circular fixed head, fastenings, frames, &c. (part circular on plan), as described to front building; 1-inch deal linings on splay, tongued and staff-beaded, with backings; 1-inch framed and grooved grounds and deal architrave mouldings filled in with Carton pierre enrichment; 1¼-inch deal moulded spandril panels plugged to wall, with Carton pierre spandril enrichment; deal moulded cornice glued and blocked; ¾-inch cover board and framed bearers. Each window head to have 2 deal scroll ornaments, filled in with Carton pierre enrichment; the cornice filled in with Carton pierre ovolo, egg, and tongue enrichment, 2½ inches girt. The whole as per detail drawing. No. 7 fir proper frames, 3 inches × 2 inches, to elliptic lights on inside, and No. 8 wainscot ditto, 4 inches × 2½ inches, moulded to ditto on outside, prepared to receive plate glass, and secured to stonework by 2½-inch screws with lead plugs in stone. No. 11 *Carton pierre* elliptic frames, with scrolls and wreath of flowers surrounding same, to windows, heads, and opposite, fixed on 1-inch deal grounds, 3 inches wide, plugged to wall.

DOORS.

Front Building.—2½-inch 4-panel, moulded both sides doors to three and two pair, 4½-inch butts; 7-inch mortice locks, and brass furniture; 1½-inch double-rebated and double-beaded jambs, and dovetailed backings; 1-inch framed and grooved grounds, 6 inches wide, and deal architrave moulding, 14 inches girt; plinths to architraves, 8 inches × 8 inches, and 4 inches thick, hollow sunk, and splayed on face. 2-inch 4-panel, moulded both sides door from staircase, mezzanine floor, 4-inch butts, 8-inch mortice lock, and brass furniture; 1½-inch double-rebated and double-beaded jambs, and dovetailed backings; inch framed and grooved grounds, 4½ inches wide, and deal architrave moulding, average 12 inches girt, and plinths as last. 2-inch moulded and bead flush enclosure, 3 panels high, to water-closet three pair, with door in same, hung with 4-inch butts, brass pulpit latch, and 6-inch brass barrel bolt; deal moulded architrave, 12 inches girt, on passage side; ¾-inch beaded fascia 6 inches high, and mouldings 4 inches girt, each side of enclosure; the enclosure fixed with No. 4 wrought iron L stays to floor. 2-inch bead flush and square partition, 3 panels high, to enclosure of closets on mezzanine floor, with doors in same hung with 4-inch butts, 6-inch dead rim lock and escutcheon; deal wrought and chamfered door stop and architrave mouldings, 4½ inches girt, next rooms, 1½-inch wrought both sides and tongued divisions; 1¼-inch wrought and cross-tongued bottoms. Two tiers high in each closet of 1½-inch, wrought both sides and cross-tongued shelves, and 1½-inch shaped brackets to ditto, 24 inches × 18 inches, pinned into wall. 1½-inch, 4-panel, bead flush and square doors, with segment heads, to water-closets in basement; 3½-inch butts, Norfolk thumb latches, and 4-inch barrel bolts; fir proper frames, 4 inches × 4 inches. 2½-inch deal, moulded both sides partition, 3 panels high *enclosure of staircase* on ground-floor, with 2-inch 4-panel, moulded and bead flush door, hung with 4-inch butts, 6-inch mortice lock, and brass furniture; deal wrought and beaded door stop; the partition and door with open panels prepared to receive stout, rough plate glass. Deal moulded cornice 18 inches girt, glued and blocked on stout bracketing, to partition on room side.

The *entrances to offices* to have 2½-inch finished deal folding-doors, each leaf in 3 panels; the 2 lower panels bolection moulded and bead flush, the upper panel open for plate glass rebated and beaded one side, and ovolo moulded the other, diminished stiles. ⅝-inch flush beads let in to form double margin bottom rail with fixed side lights, each side to correspond with doors. Small quadrant corners to open panels worked on solid with brass bronzed moulded stop, fixed with screws to glass panels. 4-inch brass butts, 7-inch rebated mortice locks with brass furniture (prime cost 15*s.* each) *on one side*, and handsome bronze furniture the other side. One 12-inch and one 24-inch bright barrel bolts, and sockets let into stone to each pair of doors. Inch framed, one-panel, bead flush both sides lifting shutters, with brass stubbs and plates and thumb-screw fastenings. The side lights and mullions to have deal moulded plinths. Fir, wrought framed, double-rebated, and beaded mullions, 6 inches × by 5½ inches, with panels sunk on face of same with baluster-moulded consoles and carved blocks over same. Solid fir frames, 5½ inches × 5½ inches, rebated, beaded, and staff beaded, and circular heads to ditto. 2½-inch both sides and framed fascia at transom over doors, with spandril open panels formed in same, rebated and beaded for plate glass. Deal moulded cornice, glued and blocked, and ¾-inch deal cover boards; the pediment filled in with pear-tree wood. Carved shields and enrichments as detail drawings. The heads over doors filled in with 2½-inch deal semicircular fanlights, framed in No. 10 divisions radiating from solid centre; the bars to divisions spiral turned with moulded caps and bases. Semicircular mouldings 4-inch girt round centre, and sunk, moulded, and carved panels 1 inch deep on one side, as detail drawings.

The *principal entrance doors* to be 3-inch finished deal, folding each leaf in two panels; lower panels bolection moulded, raised, and mitred, and bead butt the other; upper panels open for iron panels rebated 3 inches girt, beaded one side and bolection moulded the other with circular ends; hung with 48-inch Collinge's patent gate hinges of the very best description; the fangs of hinges let into stones and run with lead. Collinge's patent wrought-iron, double-action strong bolt, with lock, &c., attached, 13 feet 6 inches long; 2 ornamental cast-iron handles, fixed each with 2 screw bolts with moulded washers and nuts. 2 ornamental cast-iron wreaths and pendants with bosses fixed with screw bolts, &c., as last; 2 cast-iron, ornamental, revolving, perforated, radiating, hit-or-miss inspection plates, with ornamental handles, and cast-iron, moulded, circular rim round plate on one side. The bottom rail of doors to have deal moulded plinth glued and blocked. Deal semicircular column fixed on meeting stiles of folding-doors with moulded plinth and cornice. Carved shaft and cap deal moulded cornice and transom. Fill in the door panels with cast-iron, ornamental, perforated panelings, each of the value of 4*l*. Fill in over doors with 3-inch finished semicircular fanlight, with radiating, open, and moulded, and carved panels. The whole to be executed in the very best manner, and according to detail drawing.

Wainscot Enclosure to Clerks' Office.—2-inch finished wainscot, moulded both sides, framing 6 feet 6 inches high (*i.e.* 2 panels high), with solid quadrant corners, 3 inches thick, cross-tongued to framing. 7 inches × 3 inches wainscot, finished both sides, plain plinth grooved, 3 inches girt, 2-inch finished, moulded both sides *swing* door in 2 panels, the upper panel prepared for plate glass, hung with Smith's patent hinges. Buffalo-horn finger-plates on each side of door. 3-inch wainscot frame hollowed for door. ¾-inch wainscot moulded fascia, 5 inches wide. Wainscot saddle-back capping, 6 inches × 3 inches, rebated, moulded, and grooved. Inch wrought and cross-tongued soffit.

Doors to Cellars, &c., in Basement described as usually done.

2½-inch framed, braced, and ledged doors, covered both sides with ¾-inch, matched and beaded boarding to wine-cellars and bottling-room, hung with 5-inch butts; 8-inch copper-warded dead locks, the folding-doors to have 9-inch barrel bolts, fir proper door frames 5 inches × 5 inches, and iron stubs, ½-inch deal arch board as before.

Flaps to Wine-cellar.—1½-inch oak proper ledged folding-flaps, tongued with iron, and 1½-inch oak framed dwarf folding-doors with segment head; the *flaps* hung with 24-inch wrought-iron strong strap hinges and wrought-iron dogs fixed on; the *doors* with 3-inch butts, each secured with wrought-iron locking bar 2½ inches × ½ inch, and 5-inch brass padlock copper-warded, chain, and wrought-iron staple fixed to oak kerb with nuts, &c. Oak wrought, framed kerb, and frame 6 inches × 6 inches. Form steps to wine-cellar with No. 7 4-inch oak rounded heads 12 inches wide, pinned each end into wall.

Doors in Arcade.—2-inch wainscot folding-doors, 2 panels each leaf, lower panel moulded both sides, upper panel open for glass, beaded, and with moulded stops, hung with 4-inch brass butts. 7-inch mortice locks and bronze furniture; 9-inch and 18-inch bright barrel bolts and brass knobs; 2-inch wainscot moulded fixed fanlight, with quadrant corners as detail drawing. Wainscot, wrought, framed, rebated, 2½ inches girt, staff-beaded, and beaded frame grooved 5 inches × 5 inches, stubbed to stone sill. Wainscot moulded transom 5 inches × 5 inches, and 1¼-inch wainscot both sides lining 4 inches wide, tongued with hollow on edge, fixed with 2½-inch screws and lead plugs in stone, all as detail drawings. The openings into small office to have similar doors and fittings, one half prepared as fixed blank door, and to have 1¼-inch tongued and staff-beaded linings.

Doors leading from lobby and of arcade to be 2½-inch wainscot folding swing doors, the lower panel bold bolection moulded both sides, upper panel open for glass, beaded one side and moulded the other, hung with Smith's patent swing hinges, with finger-plates each side, 10*s.* each set. 2½-inch wainscot semicircular moulded fixed fanlight with wainscot wrought, moulded fillet 2½ inches × 1½-inch tongued on, fixed with 2-inch screws into stone. The door from lobby into the Clerks' office to be 2-inch wainscot, 4-panel door, bold bolection moulded one side, and moulded the other; upper panels open for glass, double-margined stiles hung with 4-inch brass butts, 7-inch mortice lock and bronze furniture, and 2 sets of finger-plates, prime cost 7*s.* 6*d.* each. Wainscot, wrought, framed, rebated, staff-beaded, and beaded frame, grooved 5 inches × 5 inches, with iron stubs into stone. 1¼-inch wainscot lining 4 inches wide, tongued with moulded hollow on edge, fixed with 2-inch screws, and lead plugs in stone. 2-inch wainscot moulded fixed semicircular fanlight, and 1¼-inch wainscot linings round as last; the fanlight secured to groove in stone.

The rest of the doors were minutely particularized, but being of the character of those already described in previous specifications, are omitted.

Doors to Court Dining, Court, and Binding-rooms to be 2-inch wainscot folding in 6 panels the pair, bold bolection moulded each side; 4-inch brass butts; 7-inch mortice lock with bronze furniture each side; 9-inch and 18-inch brass flush bolts; finger plates, each side, 7*s* 6*d.* prime cost per set; 1½-inch wainscot, double-beaded jambs framed in 8 bolection moulded panels. Inch wainscot, framed and grooved grounds and soffits, 6-inches wide. Wainscot moulded architraves 14 inches girt, and plinths as before described on room side only. Inch wainscot frieze and wainscot cornice glued and blocked to door caps inside rooms, with ¾-inch cover-board and framed bearers to ditto. Note.—Cement architraves to doors on staircase and passage side.

Court Drawing-room, Livery Hall, and Livery Drawing-room to have 2½-inch wainscot folding-doors, with jambs, &c., like the preceding.

The deal grounds and architraves, door caps, and the Carton pierre enrichments, all to be executed as detail drawings; the deal being tinted yellow, and the Carton pierre pink on same.

Provide the sum of 15*l.* prime cost for moulded rim to clock-stand, and figure supporters thereto, and fixing over head of central doorway to Livery Hall.

N.B.—*Here followed the details of the doors.*

The *lift* on ground and first floor to have 1½-inch deal, 2 panel bead flush, and square sliding shutters, single hung, with iron weights and proper cased boxing, brass-axle pulleys, lines, and beads complete. 1¼-inch tongued and rounded sill, with deal architrave moulding under, 4 inches girt. ½-inch beaded return linings, and architrave moulding, 4 inches girt around. The shutters to have brass flush lifts and 2 feet × 6 inch brass flush bolts to each.

Staircases.—The stairs from ground-floor upwards—front building, *south*, to be constructed with 1½-inch yellow-deal treads, 1¼-inch risers, tongued to heads, moulded nosings, mitred one end to cut string, glued, blocked, and bracketed, and strong fir carriages; cross-tongued landing to correspond with stout fir bearers; the bottom step to have large bold curtail end, with solid block veneered riser, and moulded nosing worked on solid. The treads housed and wedged into 1½-inch deal moulded wall string; 1½-inch sunk, cut, mitred, and staff-beaded outer string, with moulding on sinking; the landings to have moulded nosings and 1¼-inch sunk and staff-beaded apron lining. Wainscot bold-moulded *handrail* out of 3½ inches × 2½ inches, grooved for iron core, and French polished. Cast-iron ornamental balusters, and framed and wrought-iron core, of the prime-cost value of 7*s.* per foot run; with cast-iron ornamental newel, prime-cost value 10*s.* 1-inch deal, staff-beaded, grooved apron lining, and rounded nosing at well-holes on ground-floor, and to mezzanine and circular iron stairs. 1½-inch, deal moulded one side, *spandril enclosure* to stairs, in room on ground story.

The *stone stairs,* up to Musicians' room from ground-floor, to have *wainscot moulded French-polished handrail,* out of 3 inch × 2½-inch grooved and iron core, 1-inch × ⅜-inch cast-iron ornamental balusters, of the prime-cost value of 5*s.* per foot run, and 2 ornamental newels, prime-cost 7*s.* 6*d.* each. The stairs in waiting-room to be enclosed with 2-inch bead flush and moulded spandril framing, 1 panel high; stubbed to stone steps, &c., and staff-beaded at angle; 2-inch moulded nosing and ¾-inch sunk and staff-beaded apron lining and backings. Pieces of similar handrail at the head of the several spiral staircases, with balustrade and core as last described, and ornamental cast-iron newels.

Water-closet Fittings and Cisterns.—The basement and the water-closets adjoining Waiters' room to have 1¼-inch deal seat riser and dovetailed bearers, 1¼-inch mortice clamped flap, and framed and beaded frame with rounded nosing, 3 brass butts, cut seat holes, and beaded handle holes; the seat and riser prepared to remove easily; ¾-inch deal pipe casing and narrow grooved and rebated grounds, screwed on; ½-inch deal square skirting, 6-inch high narrow grooved grounds and backings. The remaining *water-closets* to be similar, of Honduras mahogany, French polished, moulded nosings to flap, and ½-inch beaded skirting. Put *cisterns* over each water-closet, of 1½-inch deal bottoms, screwed on, and 1½-inch dovetailed sides, on proper fir bearers, the cisterns to be fixed over, and to be the full size of water-closet seats, and 2 feet deep in clear. The *cisterns* in the Clerk's house water-closets, next lavatories, and to principal staircase, and two-pair over to be enclosed with 1¼-inch 1-panel moulded framing to soffit and front. Staff-bead at angle and small door, formed in same for access; hung with 2½-inch brass butts, and brass knob turnbuckle and architrave moulding 4-inch girt; form ledged flaps in lead flat for access to cisterns in lavatories and water-closets adjoining. The cistern over lavatories to be of 2-inch deal, 7 feet 10 inches × 1 foot 10 inches, and 3 feet 3 inches deep in clear, on strong fir bearers, and moulded soffit and front, *as before.* Attend Plumber to water-closets, cisterns, and sinks.

Finishings to Court Drawing-room.—*Deal pilasters*, framed with 1-inch panels and moulded caps and bases, with deal moulded bases and necking; the panels filled in with Carton pierre, arabesque pattern, and *Carton pierre composite capitals* (Renaissance). *Deal moulded base* continued through piers at level of pilaster bases. Fill in the piers between windows, and on opposite side, No. 8 in all, with *silvered plate glass* and inch deal framed back, 2 panels high, covered with flannel, Carton pierre enrichment, mitred round same, to form frame. 1-inch deal wrought *frieze*, dovetailed, keyed, plugged to wall, with *Carton pierre enriched moulding* on same, forming panel. Deal moulded cornice, glued and blocked, with 2 Carton pierre enriched members in ditto. The *cement archivolts*, over doors and windows, to have Carton pierre enrichment, fixed on 1-inch deal ground, and Carton pierre teazle ornament filled into key-blocks on 1-inch deal panel. The *door heads* to have Carton pierre swag of flowers, and enriched flowers 8 inches diameter in panels over all, fixed on 1-inch deal grounds, 3 inches wide, plugged to wall. Deal moulded *entablature* (round room), glued and blocked, and fixed to 1¼-inch deal framed bracketing, 1-inch deal cover board and bearers. 1-inch Honduras *mahogany frieze* dovetail, keyed and plugged to wall, tongued and mitred at angles, and Carton pierre enriched scroll running ornament fixed on ditto; the cornice to have Carton pierre enrichments, and dentil cornice as shown. The *plaster cove to ceiling* to have No. 28 deal boxed ribs or brackets, with panelled sides and soffit; 1-inch deal plain base, with mitred angles; the ribs to be fixed to 1½-inch deal-framed bracketing, and to be filled in with *Carton pierre guilloche* enriched panels and ram's head, with swag of flowers and small moulded cap, mitred around. The whole to be executed as per detail drawings. Provide and fix in the centre flowers No. 3 brass screw strong *chandelier hooks*, fixed to stout deal blocks, framed to ceiling joists.

Finishings to Livery Hall.—2-inch deal moulded and panelled *pilasters* and returns to window openings and recesses; those next shafts of columns with tapered panels and stiles; the whole with tongued and mitred angles and deal backings, plugged to wall, deal moulded and mitred; *caps and bases Carton pierre* enriched frieze, mitred round pilaster caps. The pilasters next columns to be filled in with Carton pierre ram's head and pendant bunches of flowers. Fill in *spandrils* over semicircular heads, with enriched Carton pierre spandril panels on 1-inch deal wrought grounds, and deal moulding out of 2 inches × 2 inches, mitred and grooved for plaster. Carton pierre enriched key blocks, with swag of flowers, and ribbon pendant fixed on deal grounds. The *niches* to have 1½-inch deal fluted pilasters, with tongued and mitred angles, Carton pierre enriched patera to frieze, 1½ inch diameter, moulded plinths and caps mitred around. Deal moulded *cornice*, glued and blocked on 1¼-inch deal bracketing; ¾-inch cover board enrichments to ditto in Carton pierre. Deal consoles to front filled in with enrichment; enriched archivolt spandril panels and key block on deal grounds, enriched centre flowers fitted into radiating panels on ditto. The *recesses* next pantry, under music gallery, to have deal fluted and diminished *Ionic columns*, with moulded bases and enriched Carton pierre capitals; 1½-inch deal-moulded 1-panel soffits. Deal moulded *entablature* over 1-inch deal cover-board, 1¼-inch deal bracketing; Carton pierre enriched frieze; ¾-inch deal matched and beaded linings inside. Honduras mahogany wrought sill, 5 inches × 4 inches, moulded, 3-inches girt, both edges and grooved. Provide the sum of 30*l.* for *brass ornamental balcony railing* to orchestra. 1-inch deal sunk and rebated architrave to entablature, on stout backings, with 1-inch deal cover board and bearers, with Carton pierre enrichments in ditto. 1-inch

Honduras mahogany dovetail keyed frieze, and backings. Carton pierre enriched panels, with inscription in same, and teazle ornaments over columns. The cornice with fine stucco (*see* Plasterer) on 1½-inch deal bracketing.

The attic to have 1½-inch moulded and panelled dado, with 1¼-inch plain deal returns and moulded plinth, and enriched cornice; 1¼-inch cover board and bearers—the whole fixed in 1¼-inch bracketing. The cornice above cove to be of deal moulding, glued and blocked on 1½-inch deal framed bracketing; 1-inch Honduras mahogany frieze, dovetail-keyed and upright backings; Carton pierre enrichments with modillions; small coffers to be sunk in deal soffit between modillions for enriched pateras, 3 inches diameter. The whole as full size drawing. The level ceiling above cornice to have No. 65 deal moulded, octagon-coffered panels, with Carton pierre enriched members, and enriched flowers, 16 inches diameter, in No. 5 designs. The bands round coffers to be formed with ¾-inch deal soffit and moulded fillets, 1½-inch × 1½-inch Carton pierre enrichment, filled in and enriched pendants at intersections. The whole of the work in this Hall to be executed as detail drawings, and in the very best manner. *Provide 25l.* for coat of royal arms, to be fixed in central semicircular recesses of cove. Ditto for No. 12 *figure designs*, prime cost 20*l.* each, and fixing in circular spandril panels of cove.

Finishings to Livery Drawing-room.—Carton pierre composite capitals to Scagliola pilasters and columns, fixed on proper deal grounds. Deal moulded *architrave*, mitred, over pilaster caps, and deal moulded entablature on 1¼-inch deal framed bracketing, with Carton pierre enrichments and modillions. The whole as per detail drawing. The *enrichments* generally to be *in Carton pierre*, or papier maché, as the case may be, all of the best manufacture, and to be finished and fixed in the most perfect manner on proper deal grounds. The portions for which designs may be furnished, are to be modelled to such design, the remainder to be approved by the Architect.

Skylight in Court Dining-room.—Oak wrought, rebated, and splayed sill, 8 inches × 6 inches net, with iron tongue, let into groove in oak and stone; the heading joints secured with screws, and each end pinned into wall. Fir framed upper plate, 10 inches × 6 inches net, section wrought all round, grooved for glass, double staff beaded and double splayed. No. 6 fir ribs, wrought, framed each end, rebated, splayed, staff-beaded Carton pierre wreath enrichment, 4 inches girt, fixed to ribs, and circular plate. Fir framed plate 5 inches × 4 inches, rafters 4 inches × 3 inches; inch rough boardings, closely jointed for lead, with stout firrings; 2-inch deal rounded rolls, fir framed ceiling joists, 3 inches × 2 inches, nailed to rough fillet 2 inches × 1 inch.

Various *sundries* were also specified, as a trap-door, dormer door in roof, skylights to offices, and certain cisterns, &c., in minute detail.

Provide for attending on, cutting away for, and making good after all other trades.

PLUMBER'S WORK.

The leadwork to be of the very best quality and workmanship. The prices are to include all labour, lead-headed nails, wall hooks, soldering, or otherwise, for the complete fixing and finishing of the several works. All the *lead pipes* to be drawn, and are to weigh as follows (the prices to include all solder joints, lead tacks, &c., as well as all cutting away for through brick arches and very thick walls, and fixing complete).

	inch pipe	to weigh	6 lbs.	per yard lineal.
			9½ lbs.	
1			14 lbs.	
1			17 lbs.	
1			21 lbs.	
2	,,		28 lbs.	

The Contractor will have to provide scales and weights on the premises, with the necessary attendance, for weighing any portion of the lead that may be required to be weighed either by the Architect or Clerk of Works.

Gutters and Flats.—Lay the several gutters and flats, and tops of ventilators with 7-lb. lead, to turn up against walls, on skylight kerbs, and chimney stacks 6 inches, and to an equal perpendicular height under slating, all very neatly and carefully dressed over rolls, and drips, and into cesspools, the angles of the cesspools soldered. The lead of eaves gutter to front building next Mincing Lane is to be turned over stonework of cornice, and burnt into groove in same. The lead of flat over scullery is to be dressed over oak sills of windows, and closely nailed, and the lead of flats over water-closets and dressing-rooms is to be burnt into grooves of York sills.

Kerbs to Skylights.—6-lb. kerbs to the skylights, average 10 inches wide (excepting to the domelets over water-closets and dressing-rooms and front portico), dressed over kerb and into the gutters for condensation, and closely nailed on inner edge. 6-lb. ridge capping and covering to gable-ends of skylight over scullery, fixed with soldered dots. The leadwork of flats to be neatly dressed over the kerbs of domelets, and closely nailed. 6-lb. cover to kerb, 10 inches wide, at head of quadrant skylight to Clerks' offices closely nailed, and 6lb. ditto to head of quadrant skylight where there is no ventilator, 20 inches wide, pointed in over iron girders. 6-lb. cover to kerbs of ventilator to roof of covered way, 10 inches wide, as above described. 5-lb. lead flashings next walls and chimney shafts, 6 inches wide, pointed with cement into joints of brickwork, and 5-lb. step flashings, 12 inches wide, to rakes, the flashings burnt into grooves where next stone. Line the stone gutters to roof of covered way with 7-lb. lead burnt into stone, as shown by detail drawing, the angles of gutters bossed or soldered.

Socket Pipes.—Provide socket pipes of 7-lb. lead and of equal diameter to the rain-pipes, soldered to cesspools and bent to the requisite shape to convey the water from gutters into rain-water heads, the outlet in cesspools covered with a domical perforated cap out of 10-lb. lead soldered on.

Hips and Ridges.—Cover the hips and ridges with 6-lb. lead 20 inches wide, those to roof over Livery Hall 22 inches wide. Cover the cheeks and front of dormer with 6-lb. lead, closely nailed with copper nails, and welted round door frame, and the outer trap doors in the same manner.

Rain-water Pipes.—The water from bow of Beadle's residence to be brought down by a 2½-inch lead pipe, and that from flat over staircase to the Clerk's apartments by a 4-inch soldered rain-water pipe of 7-lb. lead. The water to be brought from roof over covered way and ventilator to Clerks' offices by No. 2 lengths of 3-inch lead soldered pipe, and 1 length of 4-inch ditto, and from flat over portico on to stone gutters of covered way by 3-inch lead pipe, with bent shoes at end. Note.—All soil and rain pipes to be fixed in chases left in the brickwork.

Cisterns.—Line the several cisterns with 8-lb. lead bottoms, and 7-lb. sides; the seams and angles soldered, and the edges nailed. *Supply from Main.*—Lay on the water from the main in street along ceiling level of basement corridor by a 2-inch lead pipe up to the inside of west wall of space under entrance-hall, from which point a 1½-inch pipe is to be branched right and left round the walls of space under hall and grand staircase, as indicated by the blue dotted lines on basement plan. Lay on the water from the high-service main by a 1¼-inch pipe, along ceiling level of basement corridor, and following the course taken by the last pipe, except that it will not be continued entirely round the walls of space under hall and grand staircase, but only so far as will enable a branch to be taken to supply the cistern on two-pair story of the Clerk's apartments, and the cisterns over water-closets adjoining Musicians' room. Provide 12 feet of 2-inch and 12 feet of 1½-inch pipe for connecting with main from front wall, including opening ground and making good after, or paying the authorities for so doing, and tapping main with brass coburgs. Provide No. 6 air-vessels to the prime-cost value of 25*s.* each, to be fixed on these pipes, and one 2-inch and one 1½-inch Jennings' patent roundway stop-cock, with iron spanner key and joints.

Services and Wastes to Cisterns.—Supply the several cisterns by inch branches from the preceding mains on basement story, excepting the cistern on two pair of Beadle's residence, which is to be supplied from the cistern in roof. Provide and fix a 1-inch Jennings' patent ball-cock, with large copper ball and screw boss, and a 1-inch roundway stop-cock of his manufacture on each of the supplies to cisterns. Trumpet-mouthed standing wastes, 3 inches upper and 1½ inch lower diameter to the cisterns, with brass washer and waste, and 1½-inch under waste to drain, or to the trap of the nearest water-closet.

Water-closet Apparatus.—All the water-closets (excepting those in basement) are to be fitted with Jennings' patent double-seated valve apparatus, of the best description, with blue printed basin, brass-sunk plate and ivory-mounted handle, with water regulator complete. The 2 water-closets in basement of front building, the Beadle's servants' water-closets, the Porter's water-closet, and the kitchen water-closet, are to be fitted with Jennings' stoneware water-closet pan and trap, glazed white inside, with a 1-inch Jennings' self-closing stool cock, with brass-sunk plate and handle to each. The Clerks' water-closet in basement to be fitted in a similar manner, but with the pan marbled inside. Serve the water-closet pans with 1-inch services from the cisterns over. Provide and fix under all the water-closets above the ground-floor 5-lb. lead safes, the size of the seat, and 4 inches deep, soldered at angles, with 1½ inch syphon outlet to soil-pipe. Full-sized lead D traps out of 8-lb. lead to all the valve water-closets. 4-inch soldered soil-pipes out of 7-lb. lead to all the water-closets, excepting those on basement, with all requisite branches, tacks, bends, and junctions to drains.

Urinals.—The several urinals are to be fitted with Jennings' marbled stoneware angle urinal basins, with self-acting apparatus, screw unions for pipe and slate back, the water being laid on by ¾-inch pipe from the nearest cistern, and with 1½-inch wastes; the slate backs to those on the ground-floor where the walls are lined with glazed tiles to be enamelled, the whole fixed with gilt-headed or copper screws in the best manner to wood bricks, cut and pinned into walls, and with deal rounded cappings.

Washing-basins.—The lavatories and Clerks' lobby on basement are to be fitted with Jennings' marbled stoneware washing-basins, 14 inches diameter, with apparatus and self-closing cocks complete, with ivory pulls, engraved "hot," "cold," and "waste" to each basin, and screw unions for pipe. Inch service for cold water to these basins, with ¾-inch branches (one to each basin), and 1¼-inch wastes carried down to drains or to the nearest water-closet trap.

Sinks.—Line the sink in closet on three-pair story of Beadle's residence, and on two-pair story of the Clerk's apartments, with 7-lb. lead, soldered and close nailed with copper nails, with 7-lb. skirting at back, 9 inches high, to the sink in Beadle's house. Lay on the water from the nearest cistern with ¾-inch pipe, with Jennings' patent brass bib-cock and joint, and 2-inch wastes; that from Beadle's house to go into trap of water-closet on two pair, and that from the Clerk's apartments into trap of water-closet on one pair. Lay on the water to the stone sinks with inch supply and Jennings' patent bib-cocks. 2-inch wastes from these sinks to drains. All the sinks to have 3½-inch brass grates, and lead bell traps and syphon bends in the wastes. Lay on a service for pails in basement of front building from small cistern over water-closet adjoining with inch pipe and Jennings' bib-cock, and with a 9-inch iron grate and bell trap under same.

Skylight over Court Dining-room.—Lay the flats and ribs of skylights with 7-lb. lead and gutter dressed to stone cornice, with 18 soldered dots and screws, and secured with close copper nailing, 5-lb. step flashing, with No. 2 stacks of 3-inch cast-iron rain-water pipes, with heads and shoes. No. 2 pieces of 3-inch bent lead socket pipe, and 2 lead domical perforated gratings over ditto.

Provisions.—Provide in estimate, and to be deducted if not used, after the rate of contract, 60 cwt. of milled lead in gutters, flats, flashings, &c.

Cramps, &c.—Provide all lead for running cramps, mortices, and other means of fixing Mason's and Smith's work.

PLASTERER'S WORK.

—All the *lime* to be the best well-burnt chalk lime from Dorking. The *sand* to be sharp Thames sand, perfectly clean and free from all saline matter, and to be obtained from above

Bridge. The *hair* to be the best cow hair, long and free from grease. All the *laths* to be of the best heart of fir, and of the size known as lath and half in thickness, and to be nailed with wrought-iron nails. The *cements* to be of the very best quality of their several kinds, and to be obtained from approved manufacturers.

Generally.—All the ceilings and strings of stairs to be twice whitened, together with all cornices.

Front Building next Mincing Lane, where specifically described, of the usual description, as also the basement story throughout.

Cement Angles.—All the angles to walls intended to be papered to have Keene's cement square angle staves, and those to walls stuccoed for paint to have Keene's cement bold staff-beaded angles, with moulded stoppings where requisite.

Plastering to main Building above level of floor of Ground-story.—The ceilings of water-closets and dressing-rooms, lavatories and passage to same, together with the ceilings of all the other rooms on ground-story (excepting kitchen) to be lathed, plastered, floted, and set. The arched ceiling of kitchen and scullery adjoining south to be rendered, floted, and set, and the ceiling of scullery adjoining east to be lathed, plastered, floted and set, and whitened. Plaster staff-beaded soffit and fascia, with cornice continued on each side to girder in Waiters' room, and similar fascias and soffits to other girders where cradled down. Plain plaster cornices 8 inches girt, with fascia 9 inches high under same, to the lavatories, water-closets, dressing-rooms, and passage between strong room and binding-room. The *walls* of the *lavatory* and the 3 *lobbies* to water-closets and the openings between, to be *lined* to a height of 6 feet from floor *with Minton's white glazed* 6-inch square *tile lining*, bedded in fine plaster on a floted backing of Portland cement, and closely jointed with Parian cement. Note.—Where the washing-basins occur the tiling will not go down below the marble tops. The walls of the lavatory and 3 lobbies to water-closets above the tile lining, together with the walls of the water-closets, dressing-rooms and passage to same, to be rendered, floted, and finished with trowel stucco for paint, and with a bold flush bead along the top of the tile lining. The walls of kitchen and sculleries to be neatly stopped and twice limewhited. Lath, plaster, flote, set, and white ceiling of porch next principal hall. Plaster moulded cornice 27 inches girt on 1¼-inch bracketing, plain fascia on bracketing round circular skylight, and plaster cornice 6 inches girt.

Pensioners', Waiters', Court Dining, Court, and Binding-rooms.

—Lath, plaster, flote, and set, and twice white ceilings. Plain plaster *cornice* 15 inches girt, and twice white, 15 inches girt, in Pensioners' and Waiters' room. The Court Dining-room cornice to be similar, with egg and tongue enrichment, 3 inches girt, and plaster fascia 10 inches high. Plaster *cornice* 17 inches girt in Court room with dentil course; plaster cornice 18 inches girt in Binding-room with one enrichment 2½ inches girt, and one ditto 4 inches girt, the cornices to have 1¼-inch deal bracketing. The whole of the walls to be trowelled stuccoed, finished for paint. Keene's cement dado where described in Joiner. The Pensioners' room to have Keene's cement jambs and soffit to windows, staff beaded at angle, and moulded architrave 9 inches girt.

Provide and fix over marble pedestals in Court Dining-room No. 2 *Carton pierre Persian figures* and enriched capitals, fixed in 1-inch deal grounds 3 inches wide, and Carton pierre modillions over, as detail drawing.

Provide and fix over granite shafts No. 6 Carton pierre composite capitals at bay. The plastering to cornice and ceiling of circular skylight at bay to be finished with trowelled stucco for paint. Keene's cement to moulded bases, caps, and shafts to pilasters at Court-room, and pedestals to coupled column and pilaster with the entablature over. Keene's cement plain fascia and return over triplet window.

Serving-room, Musician's room, Music gallery, Pantry passage, and staircase adjoining, similar to the preceding.

Court Drawing-room.—Fine stucco gauged with plaster to *cove* on 2-inch deal-framed cradling. The *cove* to have cast solid moulded bands, with pateræ in ditto to diamond panels, moulded panels to compartments between brackets. Panelled and moulded soffit top of cove. The *level part of ceiling* to be formed in panels, moulded bands filled in with guilloche enrichment, and pateræ at junctions. No. 16 cast solid, *enriched spandril panels*, and 2 cast solid, highly enriched *centre flowers*, and provide the sum of 30*l.* for enrichment to central compartment of ceiling. Keene's cement *dado* as described in Joiner. The margins to walls and window linings to be formed in Keene's cement, together with the moulded spandril panels, &c., and moulded archivolt, all as detail drawing.

Livery Hall.—*Keene's cement*, moulded and panelled soffits, fascias plain, reveals, and moulded and enriched archivolt to window and other recesses; also margins round deal spandril panels. The *niches*, with their spherical panelled heads, to be also in Keene's cement, and all margins, &c., to walls below entablature. Form *coffered panels* with mouldings and plain margins around under girders and recesses at north end in fine stucco, gauged with plaster on 1½-inch deal-framed bracketing. Fix 2-inch deal-framed cradling under iron girders. Run *enriched dentil cornice* to entablature on 1½-inch deal bracketing in fine stucco gauged with plaster. Form the *cove* round hall, with the semicircular recesses therein, panelled margins and enrichments in fine stucco gauged with plaster, all as detail drawing. The cove to be formed with deal ribs out of 2 thicknesses of 1½-inch deal screwed together, 4½ inches net width, with fir framed plate, 6 inches x 4 inches, on top of pedestals. The hip-rib to be similarly constructed, but 9 inches net width. The margins to have 1¼-inch deal bracketing.

Livery Drawing-room.—Lath, plaster, flote, set ceiling in panels and margins with moulding around, and guilloche enrichment with pateræ at junctions 9 inches diameter, filled into bands on 1¼-inch deal bracketing. The semi-elliptical dome at south end to be executed in fine stucco gauged with plaster. The walls to be in trowelled stucco; also the moulded-panelled attic and enrichments therein dubbed out, all as detail drawing. Form bases to pilasters and columns with white Keene's cement polished; the shafts to same to be executed in Sienna scagliola on proper deal core. The composite capitals to be in Carton pierre as described in Joiner. Execute the dado round room in Keene's cement also, as described in Joiner.

Principal Staircase.—Lath, plaster, flote, and set the ceilings and run the cornices as shown in details. The whole of the walls to be finished trowelled stucco, with the panelling enrichments and entablature over, all as detail drawings. The pendentives to be formed out of two thicknesses of 1½-inch deal 4 inches net width, with similar ribs out of two thicknesses of 1-inch deal 6 inches net width, spiked to wall and framed into plate of dome. The *Carton pierre panels* filled in over door heads on proper deal 1-inch grounds 3 inches wide. Keene's cement moulded architraves to doors in hall and staircase ground-floor. The reveals to window openings, where not stone above the ground-floor, to be plastered in Portland cement. The semi-headed window openings of Livery Hall to have similar reveals with staff bead at angle.

Generally.—The cast plaster and Keene's cement enrichments all to be fully enriched, and to include the cost of any modelling that may be required, and fixing in the best manner. *Pugging to Sound Boarding.*—Lime and hair pugging, 1½ inch thick, to

portion of floor of Court Drawing-room over lavatory and passage to water-closet, &c., at back.

FOUNDER AND SMITH.

Metal.—The *castings* are all to be of the *best soft grey metal*, free from all imperfections in metal or flaws from the castings, and are to be proved on the site, in the presence of the Architect, with such usual tests as he may direct. The *wrought and rolled iron* is to be of the best and toughest description; the wrought-iron girders to be proved as described to the cast-iron ditto.

Cast-iron Girders, Columns, &c.—Provide, hoist, and fix the several flanged girders, large brackets or corbels for pedestals of columns in Livery Hall, hollow columns in basement, fluted hollow columns in Court Dining-room, strings for stone stairs, and lintels over the quadrant windows of Porter's residence and rooms above, with the other castings shown on the plans and detail drawings, and in accordance with the thicknesses of metal shown thereon, including patterns for the same.

Provide the king and queen heads, abutment shoes, and other smaller castings for roofs, &c., as described in specification of Carpenter's work, and on drawings of roof over Livery Hall (including patterns).

Cast-iron Sashes to Livery Hall.—Provide and fix No. 5 cast-iron circular headed sashes to windows of Livery Hall, each of the sashes to be fitted together on 4 castings, with ¼-inch wrought-iron screw bolts with ornamental heads and nuts, and with holes drilled for same. The stiles of sashes to be fixed to oak frames with 3-inch coach-head screws, the sashes to have small guilloche as margin to mullions and cord rail; all as shown by detail drawings. No. 2 wrought-iron stay bars 1 inch × 1½ inch, with flanged ends fixed with strong screws, holes drilled and countersunk to each sash.

Railing next Dunster Court.—Provide to court-yard next Dunster Court, a cast-iron ornamental street-railing, with standards and spurs to the prime-cost value of 20*s.* per foot run (exclusive of fixing), and fix same complete with mortices and lead in Portland kerb. Provide to areas of Beadle's house and Porter's rooms a cast-iron ornamental railing to the prime-cost value of 7*s.* per foot run, and fix same as last described.

Note.—The cast-iron ornamental balusters to staircases described with Joiner's work.

Rain-water Pipes.—Provide and fix to carry the water from roof of front building and from roofs of Livery Hall, Court, and

Livery Drawing-room, and Musician's room, and staircase, 5-inch cast-iron rain water-pipes, with full-sized moulded heads, shoes where required, and ends made good to drains, and the remaining roofs 4-inch ditto. No. 1 quadrant length of 4-inch pipe to convey the water from roof over the Clerk's apartments; in angle next front building over the quadrant to skylights of Clerks' offices into stone gutter.

The roof of Livery Hall to have a cast-iron moulded *eaves gutter* 15½ inches wide and 13 inches deep, entirely round same; the gutter to be not less than ⅜ inch thick, and to be carefully jointed with red-lead cement, with lion's head clips, and fixed to pole plate with strong screws, holes drilled and countersunk; proper angles, stopt ends, and outlet pieces.

No. 10 plain cast-iron *cantilevers* to carry cisterns, weight ¾ cwt. each, and fixing with end cut and pinned into brickwork with cement.

No. 2 full-sized chequered *coal-plates* to vaults under court-yard, with padlocks, chains, hasps, and staples. No. 3 bronzed ornamental *ventilating gratings* 12 inches × 4 inches, with flanges for fixing in stone steps from higher to lower level of covered way. Note.—The ornamental panels in roof of covered way and ventilator to Clerks' offices described with Carpenter's work.

Provide and fix to the entrance doors from Mincing Lane, No. 2 cast-iron ornamental handles fixed with screw bolts with moulded washers and nuts. No. 2 wreaths of fruit and flowers with pendants and screw bolts as last. No. 2 ornamental revolving and perforated hit or miss inspection plates with ornamental handle and flower centre, with cast-iron moulded circular rim, rebated at back to fit rebate in doors, fixed to deal doors with screws, holes drilled and countersunk.

No. 2 perforated panels with segmental end and semicircular top, fixed to rebate in deal doors with screws, holes drilled and countersunk, and to the prime-cost value of 4*l.* each, exclusive of fixing.

The preceding ornamental castings to entrance doors are all to be cast in the most accurate manner, filled and cleaned off, and of superior metal.

Spiral Stairs.—Provide and fix (from basement to ground-floor of front building, and basement to ground-floor of Clerks' offices) No. 2 spiral staircases of cast-iron 4 feet diameter, the treads and risers open to a plain pattern, and of metal not less than ½ inch thick, with circular newel in centre, and plain wrought-iron half round handrail and square balusters on outer edge of treads with plain chamfered newel at bottom—the whole fitted together with screws and small bolts in the best manner, and to include a quadrant landing at top to match the treads. Provide and fix from ground-floor to mezzanine of front building a similar spiral staircase, but with light cast-iron ornamental newel at top and bottom, and balusters to match wrought-iron half round handrail.

Provide and fix for ventilation to floors No. 100 cast-iron air bricks, and four splayed openings in walls for same.

Also provide No. 20 9-inch cast-iron bell traps in paving to areas, &c.

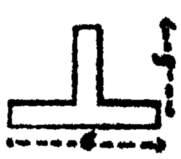
WROUGHT-IRON WORK.

Girders.—Provide, hoist, and fix the several wrought-iron girders, shown on the plans, sections, and detail drawings, the metal to be of the several thicknesses shown thereon of boiler plate, flat and L iron riveted together with saucer-headed rivets (some ½ inch, but principally ¾ inch diameter), 4 inches from centre to centre, and with wrought-iron stiffening pieces over junctions, and truss irons where requisite, and as shown.

Chimney Bars, &c.—Wrought-iron chimney bars, 2½ inches × ⅜ inch, to all openings, excepting those of kitchens, which are to be 2½ inches × ⅝ inch; wrought-iron abutment tie, 3 inches × ½ inch at arch over folding-doors of Waiters' room; all 2 feet longer than the openings, the end turned up and down.

Chain Bond.—Wrought-iron chain bond 3 inches × ⅜ inch round all walls at the level of springing of arches over basement story, and entirely round the walls under the ends of all joists (excepting ground joists on brick arches), and under the tie beams of the several roofs and joists of flats. Thus, to the front building, for example, there will be one tier entirely round the walls at the level of springing of brick arches over basement, at the levels of mezzanine, two-pair, and three-pair joists, and under the tie beams of roof; the angles to be forged so as for one to lap over the other level, one end turned down, the other up, as clip, with a ⅜-inch screw bolt, 2½-inch long head and nut to each angle; wrought-iron coupling rings over junctions of bond longitudinally, the ends turned up to receive the same. Where the floors are on different levels, the bond of the one building is to run at least 10 feet into the walls of the other where they meet (as sketch).

Bolts and Straps.—No 2 inch wrought-iron tie bolts to arches over strong room, with screwed 2-inch way collars over junctions, and flattened ends turned down into wall as caulking, and with wrought-iron plate, 3½ inches × ½ inch, the whole length under ends of same. No. 1 1½-inch wrought-iron tie rod to arches over kitchen with collars as last, and ½-inch wrought-iron plates, 3 feet × 1 foot at ends, and ⅜-inch washers, 6 inches × 6 inches, and octagon nuts. The tie bolts to strutting and roofs, and the bolts and straps requisite for fixing the roofs and floors, are described with the Carpenter's work and on the drawings of the roof over Livery Hall. ¾-inch screw bolts with heads and nuts to connect the coupled girders (those to wrought-iron girders with flanged ferules), at distances averaging 3 feet 6 inches apart.



No. 4 of the openings on basement of front buildings to have rolled-iron springers for arches as lintels over openings; No. 2 to each opening, as sketch, of ½-inch iron 18 inches longer than the openings; the space between filled in with 3-inch tooled York paving to carry the brickwork over; 3-inch tooled York templates, 1 foot 6 inches × 9 inches at ends. No. 3 rolled-iron bearers to cistern in kitchen of T iron, ¾-inch metal, and 9 feet long, webb 3¾ inches, and bottom flange 3 inches long, with 3-inch templates, 9 inches × 9 inches under ends.

No. 1 wrought-iron *framed grating* at level of gallery, formed with L iron ends, girting 3½ inches × ½ inch; side bars and No. 2 stiffening bars, 2 inches × ½ inch; No. 12 ¾-inch round iron guard bars, the end rails let into rebate on York landing, and with fangs let into ditto. No. 1 wrought-iron framed *division in strong room.* Top and bottom and 2 intermediate rails, 2½ inches × ¾ inch; end rails 2½ inches × ¾ inch, and centre rails 2½ inches × ½ inch; No. 22 ¾-inch round guard bars, the top rail fixed to soffit of iron girder by 1½-inch strong screws, holes drilled and tapped, and the ends of rails let into York paving, and run with lead.

No. 1 wrought-iron *step ladder*, 1 foot 9 inches wide, the sides of L iron girting 4½ inches × ½ inch; the treads of ditto, 3¼ inches × ⅜ inch, riveted to sides, and with 1 wrought-iron chamfered newel at top 1½ inch × 1½ inch, with strap end riveted to sides of step ladder; the ladder fixed at top with strong screws to flange of iron girder, and at bottom to mortices in paving. No. 1 cast-iron chequered *foot plate* at head of step ladder 5 feet 3 inches × 1 foot 6 inches, and of ⅜-inch metal let into rebate each end, and fixed with screws and lead plugs.

The skylight over staircase to the Clerk's apartments to be of rolled iron, hipped all ways, size 10 feet × 5 feet 6 inches; the kerb, 3 inches × ½ inch, halved and riveted at angles, and fixed to fir kerb with strong screws, holes drilled and countersunk, the ridge, hips, and skylight bars, moulded, and 2¼ inches deep, weighing 7lb. to the foot run, framed at junctions, and flanged and riveted to kerb. No. 2 cast-iron circular *conical skylights* over water-closet and lobby on one-pair of the Clerk's apartments, 2 feet 6 inches diameter, with kerb moulded bars, ventilating hopper, balance weight, crimson lines, brass pulleys, and hooks.

The *skylight* over scullery and staircase adjoining Musicians' room to have rolled-iron moulded skylight bars, 2½ inches deep, with flanged ends fixed with screws, holes drilled and countersunk. The *quadrant light* over Clerks' offices, and the roof of covered way, to have circular rolled-iron skylight bars, total weight 50lbs. each (No. 123 in all), with flanged heads, 4 inches × 5 inches, and ⅜ inch thick, let in flush to sides of fir kerb, and fixed with 3 strong screws to each, holes drilled and countersunk, and flanged ends, 5 inches × 2 inches, with 2 holes drilled for bolts, and fixed to kerb with ½-inch screw bolts, 3½ inches long, with heads and nuts, and sinkings in Portland stone for heads of bolts. ¾-inch rolled iron plate at feet of these bars, 3 inches wide, with plates riveted over junctions, the plate fixed to stone cornice with 3-inch coach-head screws and lead plugs.

Handrails and Balusters to Basement Stairs.—The stone stairs in front building from basement to ground-floor, the staircase adjoining Porter's residence, and the steps in east area, to have half round iron handrail, 1½ inch × ¾ inch, with scroll ends, ramps, &c., and ⅞-inch × ¾-inch wrought-iron square balusters, framed to handrail. The stone stairs from basement to ground-floor of Clerks' offices to have similar balusters, but fixed to wainscot handrail. Wrought-iron newels 1¼ inch × 1¼ inch, with chamfered edges, to these staircases.

Oval and Spandril Lights to Front next Mincing Lane.—Provide and fix No. 2 wrought-iron oval frames of L iron over circular headed doorways, with wrought-iron sashes fitted in and hung on pivots, with brass bushed centres; the flange on frame to be forged half on one side, and half on the other, to make sash to swing; these lights to be fitted with strong lines, brass pulleys, and hooks, to open and shut same. No. 6 small wrought-iron triangular frames for glass circular, one edge in spandrils of semi-headed openings.

Provide No. 2 *iron doors and frames to strong room* with lock, &c., as may be directed, the whole to the prime-cost value of 25*l.* each (exclusive of fixing), and fix the same complete in stone rebates to strong-room doors, letting in the fangs of frame or hinges, and running with lead.

The iron girders, columns, brackets, &c., to be bedded on stone templates, with a *seating of stout asphalted felt;* that under the wrought-iron girders to be double thickness, and a double thickness of felt over the wrought-iron girders under the stone covering.

Provisions.—The whole, or any portion not used, to be deducted at the rate of price in the schedule. 5 tons of cast iron in girders, columns, or other similar castings, including cost of patterns, proving, hoisting, and fixing. 20 cwt. wrought iron in straps, twisted straps, and screw bolts, including fixing. For ironwork to secure stonework of coat of arms to front, the sum of 4*l.* prime cost of materials and labour. For ironwork to secure the stonework of cornice to front building, the sum of 15*l.* prime cost of materials and labour.

GLAZIER.

Main Building.—All the glass to be of the very best quality, and to be glazed in the most sound and careful manner. All the glass to doors to be bedded in wash-leather. The whole of the glazing in the one-pair and ground-floor (excepting where described to be stained or embossed) to be the best *British plate glass*, with bent squares to circular sashes. The 5 large windows on the side of Livery Hall are to be filled in with *stained glass* from the old hall, and not to be included in this contract. The Contractor is to *provide* in his estimate the sum of 300*l.* for stained glass and glazing, as directed by the Architect, to No. 15 semicircular sashes, to be deducted if not used. The whole of the lower sashes in the Court Dining-rooms, the Court-room, and Binding-room, to be of *British plate* of an embossed pattern, to be selected by the Architect, together with that at the back of half space of principal staircase. The upper panels of doors to closets on each side of principal staircase, and door at head of basement stairs, to be glazed with *embossed plate glass.* The *dome* to be glazed with best *British plate glass* $\frac{1}{4}$ inch thick, embossed to design to be approved by the Architect, and bent circular and cut to shape as per detail drawings, and secured to oak sill at bottom with copper clips. The *domical light* to Court Dining-room to be glazed with similar embossed *British plate glass*, as described to dome. The No. 10 *domlets* to be glazed with $\frac{3}{8}$-inch *British plate glass*, ground on one side, and secured with copper clips and screws, oak blocks 4 inches × 3 inches × 2 inches. The sashes in lavatories over water-closets to be glazed with 21-oz. *Chance's fluted glass.* The skylight over the back staircase and water-closet of main building, also skylight over staircase next the Clerk's rooms, the skylight over scullery, to be glazed with $\frac{3}{8}$-inch *rough plate glass*, and the skylights over front building and over passage leading to Musicians' gallery to be glazed with ½-inch rough plate glass to iron sashes. The 2 windows of the entrance hall and the upper panels of the entrance door from the covered way, the door from entrance porch to the Clerk's office, and the 3 closet doors on the principal staircase, to be of best British polished plate glass, to be embossed and of approved pattern. The door leading to lavatories to be glazed with No. 2 squares of Chance's 26-*oz. fluted glass.* The remaining sashes to be glazed with best 18-oz. crown glass, bent circular to circular sashes, including the sashes to water-closet to Pensioners' and Waiters' rooms, and in basement Venetian sashes to be glazed with Chance's patent 26-*oz. fluted glass.* No. 8 squares of silvered plate glass and glazing in flannel, 1 foot 6 inches × 6 feet 3 inches, to Court Drawing-room, as shown in detail. The sashes to Music-room to be glazed with patent plate ground one side. The sashes to Serving-room, water-closet, and mezzanine over to be glazed with *patent plate.* The No. 2 conical skylights to be glazed with ¼-inch *rough plate.*

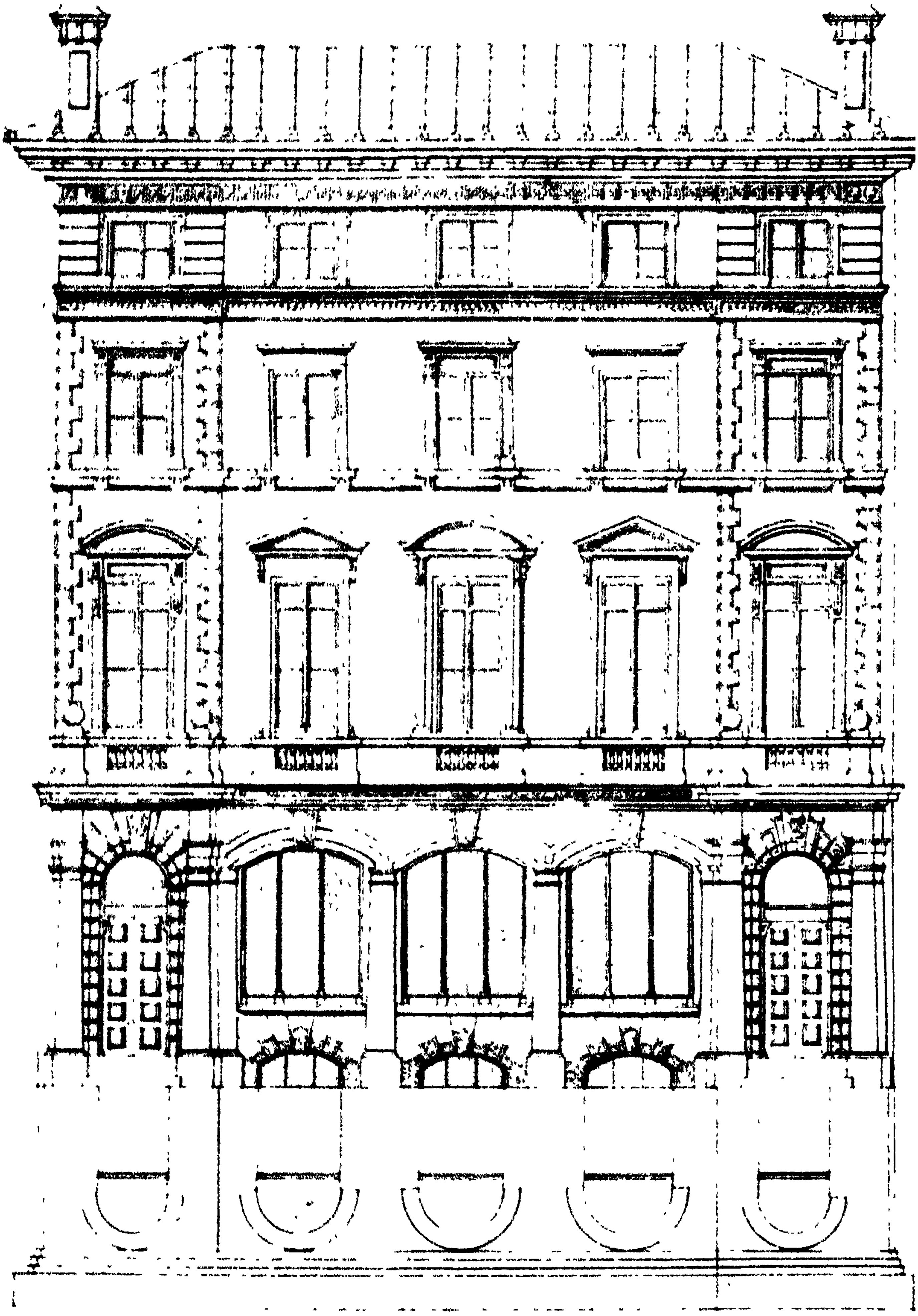
Covered Way from Mincing Lane.—The sashes and sash doors on both sides of covered way to be glazed with the *best British plate glass.* The roof and quadrant skylight over Clerks' offices to be glazed with *Hartley's matted plate glass* $\frac{5}{16}$ inch thick, of approved pattern, bent to quadrant shape in one square, each bedded in red-lead putty.

PAINTER AND PAPERHANGER.

All the *paint* to be composed of the best pure ground *white lead* and oil properly mixed, and of such ordinary tints as may be directed. *Work.*—The *woodwork* to be properly knotted with silver leaf, stopped, prepared, and rubbed down between each coat. The *ironwork* where painted to have 2 coats applied before leaving the foundry and smithy. The *walls* to be properly prepared and claircoled to receive the paper, which is to be carefully hung with the edges cut close.

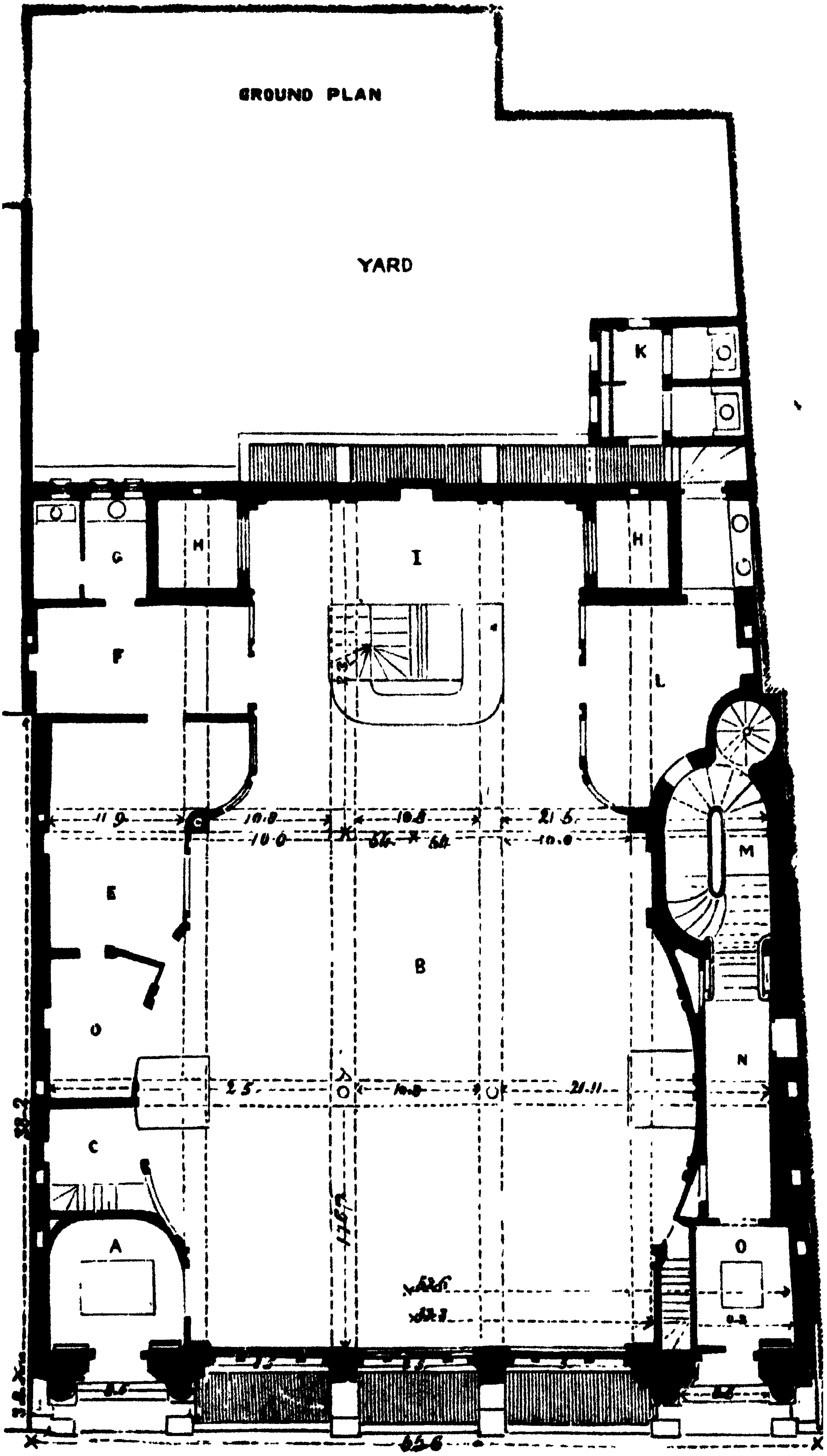
Inside Painting. The Carton pierre and papier maché works throughout, to be painted 3 times in oil colours, and left for completion at a future period. The whole of the Joiner's work (the wainscot work excepted), to be painted 4 times in oil colours. The ironwork throughout where seen to be painted 4 times in oil colours, and where not seen to be painted twice with lithic paint. The stone chimney-pieces to be painted in 5 oils.

Graining.—Extra grain imitation wainscot in the very best manner, and twice varnish, with copal varnish, the Joiner's work to the following (wainscot work excepted), Clerk's offices, and the



Vincent Brooks lith

LONDON & WESTMINSTER BANK
(BLOOMSBURY BRANCH)
Henry Baker Archt.



London and Westminster Bank, Bloomsbury.

ground mezzanine, and one-pair story of front building in Mincing Lane.

External Painting.—The external ironwork and lead-socket pipes where seen, to be painted 5 times in oil colours; also the cement reveals to windows. The *iron railings* to be finished bronze *green*. Paint all the Joiner's work (the wainscot work excepted), 4 times in oil colours. The *entrance doors* to be finished *bronze green*, and twice varnished with best copal varnish.

All the painting to be left perfect at the completion of the works.

Specification of Works for the Erection of the BLOOMSBURY BRANCH BANKING-HOUSE *for the London and Westminster Bank in High Holborn, in the Parish of St. Giles-in-the-Field.* HENRY BAKER, *Architect.* 1853-4.

EXCAVATOR.

Excavate the ground to the necessary depths for the concrete foundations, footings, drains, &c., fill in and ram the ground to foundations, and cart away the superfluous soil.

The *concrete* to consist of five parts Thames ballast to one part ground stone lime, and to be cast into the trenches from a 10-feet stage.

To throw in a bed of *concrete* under site of all walls and piers 2 feet wider than lower course of footings, and 2 feet thick, except to strong rooms, areas, vaults, and other low walls, and to south wall of Bank, where it is to be but one foot wider and one foot thick.

To cover the whole area of basement with a layer of *concrete* 6 inches thick, well consolidated and brought to a level surface to receive the paving, sleepers, &c.

BRICKLAYER.

The *mortar* to be composed of two parts clean river sand from above Bridge, and one part strong grey stone lime, carefully mixed and tempered, and the work to be grouted where the Architect shall direct.

Brickwork.—The Contractor to execute all the *brickwork* shown and described, and all Bricklayer's work necessary to complete the intended building. The *old party walls*, which remain, are to have all the holes and other defects occasioned by pulling down the adjoining houses perfectly repaired and made good as the new works proceed. Cut all necessary chases, indents, splays, &c. All the brickwork to be executed with a close joint, and bonded and backed in sound and solid to masonry and all other work. The *bricks*, unless otherwise described, to be hard, sound, well-burnt grey stocks of approved quality. All the external faces of the *rear front* of house and Bank above ground level *to be faced with seconds marles.* All the openings in rear fronts, and all other external openings in sight, including archways in front area, to have 1½-*brick gauged arches.* All half-brick walls, also the front wall of basement story, including the footings, the *footings and piers* under iron columns, cisterns and sinks, likewise the backing in of all masonry, to be executed *in Roman cement.*

On all cast-iron bearers carrying walls bed in cement 3 inches tooled York, coped to width.

Under ends of all cast-iron bearers above basement bed in cement 6-inch tooled York templates, 2 feet 6 inches × 1 foot 6 inches.

Generally assist to bed in cement all bases, templates, &c. mentioned in Mason and other trades.

Build the *arched ceilings* as shown, with spandrils filled in solid, also the front vaults, larder, &c., with 3 openings for *coal plates* and 2 larger ditto for *illuminators.* The soffits of all arches to be raked and pointed after centres are struck, and all the walls in basement not rendered to be worked fair, and joints struck for limewhiting. Lay all the drains as shown and described, the 2 *main drains* to be 9 inches internal diameter, and 1-inch rims, the *branch drains* to be 6 inches internal diameter, and ½-inch rims, all of *glazed Staffordshire ware*, as required by the Commissioners of Sewers, jointed in cement. To obtain permission, and *pay fees* and expenses of carrying drains into common sewer in Holborn, including outfall, pipe, galvanized cast-iron valve, &c. complete. To cut all skewbacks, splays, quoins, groin points, &c. Generally cut away for and back in after all trades, form a flue with 3-inch York covers where necessary to each chimney; also two *flues for descending stoves*, to be carried by arches across parts of basement, and fix 3 iron double soot-doors and frames, to carry up the chimneys and shafts, as shown in the drawings. *Parget and core* the flues, and finish each (except to stone shafts) with a first-size *pot* *set and flanched* with plain tiles and cement; divide the upper parts of air-flues from strong rooms and other parts of basement by a wythe of ⅛-inch slate extending 3 feet down; turn ½-*brick trimmers* 20 inches wide, carefully wedged for slabs; fix to all the chimney openings wrought-iron bars, 2½ inches × ½ inch, 1 foot 10 inches longer than the openings, caulked 2 inches at each end, to be provided by Smith; build dwarf walls in basement under plates of floors, also under the bottom steps, spandrils, and other necessary parts of the stone staircases, and under kerbs of iron gratings; *set* two *ranges* with ovens and boilers for kitchen scullery, and *a stove* in all other chimney openings; *set a copper,* and render it.

Provide and bed in the various walls 10 cwt. of iron-hooping bond. Perform other works connected with *drains,* including altering or diverting any present old drains passing under the premises, filling up old cesspools, &c. with dry lime rubbish to the extent in value of 60*l.* Execute any bricklayer's works required in connexion with the *book lift* to extent of 5*l.* Execute sundry bricklayer's work and shoring, more than shown or described, in underpinning, and otherwise making good walls of adjoining premises to the extent of 50*l.* in value. Make good brickwork to ends of party walls of adjoining houses, with seconds or other facings to correspond with present fronts, and repair all holes and other defects in adjoining party walls occasioned by pulling down.

Provide and maintain *an office for the Clerk of the Works,* with desk, &c. complete, and remove same at completion.

Maintain present hoard and shoring during the works. Credit same, and remove at completion. Take up and credit the brickwork of present vaults.

MASON.

All the *stone* to be from the hardest beds, free from vents, flaws, or defects, and to be laid on its natural bed.

Works.—All parts to be secured to each other and to brick walls with *cramps, dowels, plugs,* &c. in the best manner. All *projections* to have countersunk and weathered tops, and the joints of upper beds of main cornice, and cornices and pediments to windows and doorways, to be grooved and run with white lead.

Execute the *masonry* above the string course over the ground-story windows, including the two chimney shafts with *Caen stone* from the "Great Bed" of Messrs. Gates & George's, late Luard

Beedham and Company Quarries. (The whole front was ultimately executed in Portland stone.) The façade and the balustrade to front area to be worked and finished in a masterly style, the mouldings carefully got out, and all parts which abut against projections to be housed in.

The *marble slabs* to be clear vein marble polished.

All the stone and marble work to be carefully cased or covered with composition, and to be carefully cleaned off, polished, and made perfect at finish of works.

Basement Story.—Staircases and Paving.—Lay over the whole of basement story, excepting the vaults, areas, Porter's room, and room in south-west corner, 3-inch *tooled York paving* in regular courses on half-brick wythes, close joints, squared through and bedded in cement, fair joints next flooring and steps; large stones to form slabs and hearths to fireplaces. *Pave* the front and back areas and water-closets in vaults with 2½-inch tooled York bedded solid on concrete. All the paving to be cut and notched to shape where needful. Bed on principal piers No. 12 York templates, 2 feet 3 inches square and 6 inches thick, with fair tooled edges, and No. 5 dressed *Haytor granite bases* 9 inches thick, under cast-iron columns, morticed as may be necessary.

Fix under the cast-iron column by stairs a 6-inch tooled *York base*, 1 foot 6 inches square, with tooled edges, &c., and bedded in cement upon the brick foundation. Bed under ends of cast-iron beams 4-inch York templates, extending 6 inches beyond sides and ends of bearings; all templates to be bedded in cement. Fix to apertures for ventilation 3-inch York sills and lintels through thickness of walls, 12 inches longer than openings, with fair tooled edges, and morticed for double iron gratings. Fix to all doorways, including vaults, 7-inch tooled *York steps*, and 6-inch lintels through thickness of walls, back jointed to paving, housed in 4 inches each end, and morticed for posts, &c. Bed on piers of north external wall 9-inch tooled *York bond course* 2 feet 3 inches, bed with fair tooled edge, notched where needful for piers, &c. Fix 6-inch stone sills, sunk and throated, to all windows, 4 inches longer than width of openings, to project 2 inches and 3 inches under sash sills. Fix to ascend to ground-floor of Bank a *stair*, as shown by "lift," of 6 flyers and 8 winders, solid rubbed York, built on spandril walls, rebated, back-jointed, and fair rubbed ends, circular end to bottom step and mortices for railing. Fix to ascend to ground-floor of house 14 similar flyers, and 1 winder pinned or built 6 inches into side wall, and on spandril wall and arch, rounded end to bottom step, back joints, fair rubbed ends, mortices, &c. as above; the top step will be formed by landing, to be described with ground-story; 1 brick wall to carry these stairs. Fix over headway of this stair, to carry the circular wall of stair above, a 6-inch tooled *York landing* sunk edge to fit curve of wall of ground-story, fair tooled, end and edges morticed for snug on column cap, and pinned 9 inches into walls. Fix to ascend to Messenger's room 7 flyers and 6 winders, of solid rubbed York, on and pinned to brick walls, rebated, back-jointed, and fair rubbed ends, circular end to bottom step, and mortices for iron railing.

Fix to *chimney in wash-house* 2-inch rubbed stone jambs 12 inches wide, and mantel the same, haunched with key stone, stopped, chamfered, cramped, and let into slab, 1½-inch deal shelf and cut brackets. Fix in Porter's room similar *chimney dressings*, but to be 8 inches wide and without key stone, but with shelf and brackets as last. Fix to entrance doorway of passage to strong rooms stone jambs 6 feet 9 inches long, head and sill 7 feet 6 inches long, all 18 inches × 9 inches, all in sight to be rubbed. 2 rebates and beads for iron doors; outer edges next passage beaded. To fix to each of the strong-room doorways similar jambs 7 inches × 7 inches, and head and sill 1 foot 2 inches × 9 inches, single rebated and beaded. Fix in wash-house a 6-inch tooled *York sink* 5 feet × 2 feet 6 inches, on brick piers in cement, with rounded corner and hole for bell trap. A similar *sink* in Porter's room 2 feet × 1 foot 6 inches on piers as other.

The *paving in yard* and areas to be laid with currents, and provide and fix in same eight 6-inch iron gratings and traps in extra thick stones dished out for same. Fix to larder 3-inch tooled York sill and lintel with tooled edges. Fix to back areas tooled York *area kerbs*, 14 inches × 6 inches, fair top and 2 edges, double plugs, and lead and fair ends. Lay the yard with 2½-inch tooled *York paving* on 6 inches of hard dry rubbish.

Ground-story.—Fix to each entrance 3 *Craigleith steps* average 2 feet wide, each in 1 stone, square nosings, rebated, back-jointed, housed, each end into plinths. Pave the lobby of public entrance with 4-inch Craigleith pavement, bedded on concrete as described below, and a space of 15 feet superficial to be sunk 1½ inch for mat, to be finished with fair joints to floor. Lay in private entrance and passage and closet there 3-inch *Portland paving* bedded on fine concrete on arch of basement ceiling, to extend under first 5 steps of stairs up to one-pair. Fix from the ground-story to one-pair story *Portland staircase* with quarter spaces, landings, &c., as shown in drawings, and as follows:—14 flyers, a landing with horse-shoe notch in same for well to basement, 5 circular steps, 2 quarter-spaces, and 7 winders, in all 30 risers 7 inches × 3 inches each; the steps moulded, rebated, back jointed with fair, straight soffit, mitred, and moulded ends, and housed in 9 inches, pinned in cement, the winders to be out of solid, 5 of them to have circular faces; the landings and quarter-spaces to be 8 inches cut and finished, moulded and housed, and pinned 9 inches; the 4 first flyers will not be pinned to wall, but are to be carried upon brickwork. Cut mortices for iron balusters, railings, &c., complete. Fix for descent to back stairs 1 quarter-space, 1 flyer, 2 winders, and a circular 8-inch landing to join upper flyer of basement stairs; the circular landing of rubbed York, all the rest of Portland, all with square nosings.

Fire-places.—Fix on each side of Bank 4-inch rubbed York landing, 5 feet × 4 feet 6 inches, with holes cut for flues of descending stoves. Lay tooled York *back hearths* to all chimney openings, and 1½-inch stone slabs, 20 inches wide, where not otherwise described. Fix two 1¼-inch plain *stone chimney-pieces* in Clerks' and Messenger's rooms. Fix 2 *vein marble box chimney-pieces* in Manager's and private rooms, and one ditto, plain ditto, with jambs, mantel, and shelf, 7 inches wide. Provide for chimney-piece, slab, hearth, stove, and fixing complete, at south end of Bank, the sum of 40*l.*

Fix at back entrance 3-inch tooled York landing steps and riser cut and pinned to walls, and tooled York solid steps 11 inches × 7 inches, to descend to yard, back jointed. *Pave* the *urinary* with 2½-inch tooled York on concrete 6 inches thick, and fix tooled York step as last to entrance. Fix on the arches across front area 4-inch stone capping 27 inches wide, plain top, and edges throated. Fix under steps at each of the 2 front entrances a 4-inch tooled York landing 12 feet × 3 feet 7 inches, with tooled edges, bedded in cement on the brick piers.

One-pair Fire-places.—Fix in kitchen a 2-inch stone chimney-piece, jambs, and mantel, 14 inches wide; haunch and keystone. To sitting-room fix a *vein marble chimney-piece* under window, of the prime-cost value of 70*s.* Lay to both kitchen and sitting-room tooled York *back hearths*, and 1½-inch rubbed stone slabs. *Provide for chimney-pieces*, &c., to front rooms, including cast-iron hearths, marble slabs, handsome stoves, and fixing the whole complete, the sum of 100*l.*

Form the floor of overhanging passage to back stairs with three 4-inch York landings, rubbed both sides, with circular fair sunk edges, joggle joints, and lead, pinned or built 14 inches into back wall; rubbed York risers to form steps at each end, and rubbed

York solid step next house passage, back jointed and pinned to walls each end. Prepare and fix in *lavatory* off stairs between one and two pair inch marble top to closet, with rounded and polished edge and corners, and hole cut and rebated for basin.

Two-pair.—Fix 5 plain stone *chimney-pieces* to 2 feet of opening, 1½-inch jambs, mantel, and shelf 6 inches wide, and 1 plain box ditto to 3 feet opening. To repair, clean, and refix 1 *marble box chimney-piece* to 3 feet opening. Lay to all chimney-openings rubbed York *back hearths*, and 1½-inch rubbed stone slabs. *Three-pair.*—Fix 3 plain *stone chimney-pieces* to 2 feet opening, and 2 ditto ditto to 2 feet 6 inches openings, and lay York back hearths and stone slabs as to two-pair story.

Roof.—Fix to parapets, stone *feather-edged coping* 18 inches wide, 3 inches on front edge, throated one edge with sunk quoin stones, fair ends, joints, &c., set in cement.

Back Front, &c.—Fix to all window openings and blanks 6-inch stone sunk and throated *sills* 9 inches wide, and 5 inches wider than the openings; circular ditto to circular windows and blanks. Fix to all parapets, rakes of flues, &c., stone 3-inch *feather edged coping* to project 2 inches each side, throated, and with sunk quoins, fair ends, joints, &c., and circular ditto to circular parapets. Cut holes for air-flues and set in cement. Cut mortices and holes for all Smith's work.

Provide for executing other masonry as may be directed by the Architect, the sum of 100*l.*

SLATER.

Slate the roofs as described on the drawings with best *Bangor duchess* slating, on battening, copper nailed; perform all necessary cuttings to eaves, rakes, hips, &c., and leave the whole complete after all trades. Cover the boarding of main roof and kerb with *patent roofing felt,* on which to nail the battens for slating and iron roofing. *Cover the roof* over Servants' circular passage to back stairs with *inch sawn slate* (in 4), with sunk edges and circular sunk and throated outer edge, well pinned to wall, and pointed with cement, zinc tongues, double grooves, and oil cement, ¾ slate fillets, 3 inches wide, bedded in cement.

Fix to window in circular ½-brick wall 1½ rubbed *slate reveals,* 9 inches wide, with fair rubbed edges, and fix over water-closets and urinals in yard 1½-inch *slate cistern,* 10 feet 6 inches × 11 feet 3 inches, and 2 feet deep in clear, put together with gun-metal bolts and tie rods, red lead, &c., &c., and cut holes for Plumber complete.

Fix *slate urinals* in yard as follows:—3-inch enamelled slate channel, 12 inches wide (about 7 feet long), and concrete 6 inches thick; cut hole for grating, and provide and fix one 6-inch brass grate and bell trap; inch enamelled one face, slate back and sides, 10 feet × 5 feet, with rounded enamelled edges, 1¼-inch enamelled both faces, slate division, 1 foot 8 inches × 5 feet, with rounded and enamelled edges and corners, cut and pinned to wall, rebates, and oil cement, notched over channel and to stone paving; ¾-inch enamelled both faces, front 7 feet × 1 foot 6 inches, with rounded and enamelled edge, grooves, and oil cement; cut hole for pipe. Fix in lobby, by Clerks' room, and in Manager's lavatory, inch *enamelled slate tops for wash-hand basins*, cut and pinned to walls, and with rounded and enamelled edges, and 4 holes cut and rebated for basins; inch *enamelled slate skirting*, 6 inches high, with enamelled ends.

Cover the larder in front area *with inch sawn slate* 5 feet × 6 feet 3 inches, cut and pinned to walls and throated at edge. Fit up inside of larder with 2 tier of inch-*slate shelves*, 1 foot 4 inches wide, rubbed one face and edge, rebated joints, and cut and pinned to walls. Fit up *wine-cellar* with 2 tier of *inch drawn slate shelves*, and ½-brick divisions to form bins; the shelves about 71 feet super in all, with about 38 feet of circular sawn edge, all cut and pinned to walls.

FOUNDER AND SMITH.

All the *castings to be proved* by the hydraulic machine or by weights, and to be run from the second melting of No. 2 cold-blast iron, from patterns to be approved by the Architect; to be town castings, and fixed on felt bearings where not otherwise described. All the straps, ties, and bolts to be made from the *best cable iron*, to be carefully forged and welded, with strong heels at all bends, and screw ends and nuts well turned. To provide and fix all the cast and wrought-iron work, described with the other trades, and necessary for the execution of the works intended.

Basement.—Fix to stairs ascending from Porter's room *wrought-iron rounded handrail*, 2 inches × ½ inch square, *wrought-iron balusters*, 1¼-inch newel and short ramp, run with lead to stone. Fix to stairs ascending to bank, and to ditto ascending to Manager's residence, similar wrought-iron handrail and balusters. Fix to each of the 3 openings in upper part of south wall of long passage to strong rooms, inch square wrought-iron guard bars, 6 to each opening (8 inches space between front and back row), let into stone top and bottom, and run with lead. Fix wrought-iron framed *guard bars* to windows in south wall, to weigh 10lbs. per foot super.

Fix to deed room a *cast-iron sash*, 3 feet × 5 feet, and weighing 26lbs. per foot super, built into wall, and let into stone sill and lintel. Fix to strong rooms 5 *wrought-iron doors*, of ¼-inch plate iron, 3 feet × 6 feet 3 inches, with rails and stiles of ¼-inch iron, 4 inches wide, middle rail 9 inches wide, riveted on both sides, to form 4 panel doors, including top and bottom centres, fitted into cast-iron frame; No. 9 *Chubb's patent locks* for same. Provide and fix 1 pair of Chubb's patent wrought-iron *fire-proof folding-doors*, with inner *open wrought-iron folding-gates*, with frames, lock, and fastenings complete, 4 feet 9 inches × 6 feet 9 inches in the clear.

Provide No. 3 cast-*iron coal plates*, with chains and fastenings, and let into street paving complete. Provide No. 2 Barlow's patent *illuminators*, 1 foot 6 inches diameter, and let into and run with lead to street paving. Fix *cast-iron gratings* to front and back areas, weighing 28lbs. per foot super, with caulkings and lead to kerbs, and upright bars to parts of windows rising above horizontal bars. Fix cast-iron springers, or bearers, for arched ceiling, &c., as follows:—3, weighing 80lbs. per foot run, 48 feet 3 inches long in all; 8, weighing 30lbs. per foot run each, 7 feet 3 inches long; 6, weighing 70lbs. per foot run, 72 feet long in all. Fix one 4-inch solid cast iron column to carry end of stairs wall, 11 feet long with cap and base.

Ground-story and above.—Fix 4 *wrought-iron doors* to book-rooms, with frames, locks, &c., complete as to basement, a double door and frame to each room.

1 cast-*iron hollow column*, to weigh 10 cwt., with cap and base; 4 ditto ditto, to weigh 17cwt. each, with bases and bracketed caps 19 inches square; 4 *cast-iron girders*, 23 feet long, each to weigh 75lbs. per foot run; 2 ditto ditto, 11 feet long, each to weigh 112lbs. per foot run; 2 ditto ditto, 11 feet 8 inches long, each to weigh 112lbs. per foot run. Fix *cast-iron girders* to extent of 34 feet 6 inches long, weighing 112lbs. per foot run. Fix 2 *cast-iron stancheons*, 15 feet long, each weighing 85lbs. per foot run; 2 cast-iron girders, 18 feet 4 inches long, each weighing 165lbs. per foot run, to carry cross walls of two-pair story. 12 *cast-iron girders* (221 feet run in all), to weigh 120lbs. per foot run; *cast-iron socket girder* (108 feet run in all), to weigh 160lbs. per foot run. 2 *cast-iron girders*, 22 feet 10 inches long, each weighing 120lbs. per foot run; 6 ditto, 10 feet 9 inches long, each weighing 40lbs. per foot run; 3 ditto, 10 feet 9 inches

long, each weighing 28lbs. per foot run, with moulded bottom flange.

6 cast-iron ornamental *horizontal gratings* under skylights to south end of bank (3 feet × 3 feet 7 inches each), in small squares and hexagons, with astragals at intersections, weighing 10lbs. per foot super.

9 *cast-iron sashes* (4 feet 6 inches square) in upper walls of bank, each in 28 squares, with astragals at intersections, weighing 26lbs. per foot super, let into and grooved to stone sill and head, and run with lead complete. 3 *cast-iron Venetian outer frames* to front bank windows, with columns 2 inches diameter, moulded ornamental bases, and cut and moulded trusses at top to opening, 8 feet 5 inches × 10 feet, with circular head. 3 *wrought-iron inner frames* to ditto, formed in 2 thicknesses, one rebated for glass, the other screwed on as stop for ditto, in 3 divisions, with circular head to opening, 8 feet 10 inches × 5 feet.

3 sets of *Bunnett and Corpe's* curvilinear *revolving shutters* for windows, 8 feet 5 inches × 10 feet, with segment heads, to rise from below the sill, including all working gear and apparatus complete.

Provide for guards to fanlights over entrance doors the sum of 8*l.*

Fix to principal stone staircase a cast-iron railing to choice, with wrought-iron core to mahogany rail complete, of the prime-cost value of 10*s.* per foot run. 3 1-inch square wrought-iron balusters and iron core fitted to short length of mahogany hand-rail at top of back winding stairs; one 1¼-inch wrought iron newel, and 4 feet of wrought-iron top rail 1¼ inch × ½ inch.

Fix *wrought-iron guards* to one-pair back windows, 1-inch round bars framed to 1 inch × 1 inch top and bottom and 2 inch × 1 inch middle rails with flat ends, and strong 1½-inch screws to frames. To stairs from one to two pair 4 *cast-iron balusters*, 1¼-inch iron to match turned balusters, with ends let into and screwed to risers. Galleries in bank 48 *cast-iron hollow standards* 2½ inches diameter, and 3 feet 3 inches high, with forked ends bolted through fir, with 1½-inch wrought-iron bolt 6 inches long; 2-inch hollow top rail fitted into and passing through eyes of standards, and 1-inch diameter, wrought-iron lower rail fitted in like manner, part of the rails circular on plan; 4 ornamental scroll ends to top rail, the whole filled up and cleaned off for painting. File up and clean off in like manner the cast-iron columns, sashes, frames, and other ironwork of ground-story, which is in sight. Cover the front slope and hips of main *roof* with *galvanized cast-*

iron plates (size about 2 feet 1¼ inch × 2 feet), $\frac{3}{16}$ths of an inch thick, with rolls (including ridge and hip rolls) cast on, each plate secured by 3 strong copper screws to inch battens 3 inches wide. Fix *scrapers* to entrances of the prime-cost value of 4*l.*, including fixing. *Provisions.—Provide* 50 cwt. of cast iron, including proving and fixing. Provide *stoves, &c.*, as follows :—5 at 20*s.* each, prime cost, exclusive of setting ; 3 at 25*s.*, ditto ditto ; 7 at 30*s.*, ditto ditto ; 5 at 50*s.*, ditto ditto ; 1 range at 15*l.*, ditto ditto ; 2 *Cundy's patent stoves* with descending flues, at 20*l.* each, prime cost, exclusive of fixing ; one 24-inch copper, including furnace, bars, door, soot-door, &c., complete. Provide 2 iron bearers for chimney shafts, the sum of 5*l.* Provide 10 cwt. of wrought iron in screw bolts, straps, &c., and fixing more than described. Provide for *bell hanging* and *speaking-tubes* to the extent of 40*l.* in value, including fixing.

CARPENTER.

Hoarding.—The Contractor to maintain the hoarding and shores, to alter the same as may be necessary, and remove the same when directed, for which he will give credit in his tender.

Materials.—The *deals* to be of the best crown Memel, Riga, or Dantzic, free from shakes. The *boarding* to be seasoned Geffel or Petersburgh planks, deals, or battens ; plank stuff, if used, must be ripped in two.

Work.—Execute the carpentry shown and described, and all Carpenter's work necessary to complete the intended building and works. The timber work to be framed and put together in the most accurate and substantial manner ; all mortices and tenons carefully cut, and all joints pinned with oak or iron ; the timber connected with ironwork to be accurately fitted, and all bolts and straps fixed with care. All framed work to be carefully examined before the finishings are done, and wedged and screwed up, and fix all wedges, furrings, fillets, &c., needful to make it stiff and fit for the finishings ; all boarding to be close jointed, and that which is covered with lead to be thicknessed and cleaned off ; cut all rebates, holes, &c., for and attend on Plumber, and generally cut away for all trades, and reinstate after.

Construct the *floors* and *ceiling floors*, roofs, kerbs, flats, and gutters, as shown and described in the drawings. Fix at eaves of main roof No. 41 rolls, 13 inches long out of 6 inches × 6 inches, with shaped ends sunk on face for Plumber to dress his lead to (*see* sketch).

All *openings* in external and internal walls, not otherwise described, to have *lintels* the whole thickness of reveals, 4 inches thick to 4-feet openings, and 5 inches thick to openings above that width (cut circular to openings in circular walls), to bear 4½ inches each end on templates, 4½ inches × 2¾ inches; wood bricks 4½ inches × 2¾ inches to all apertures which have doors or windows in them 2 feet apart, exclusive of 1 at top, and 1 at bottom of each reveal.

Frame *quarter partitions* in the different floors as follows: the thicknesses are shown on plans by figures—end posts, doorposts, and door heads, 4 inches wide, quarters generally 2½ inches wide; sill and head to partitions one-pair 6 inches wide, including circular partition. Frame and brace the whole, as may be necessary and as usual, with principal posts 6 inches wide, and braces 4 inches wide.

Provide and fix *centring* to all trimmers, vaults, and arches, which is not to be struck until permission is given to do so by the Architect or Clerk of the Works. Provide casing to all Masonry and other superior works. Batten out the walls of staircase and entrance passage, as shown on plans, with quarters 3 inches × 2 inches, strongly fixed with holdfasts. Fix to *water-closet* off stairs, wall plates 4 inches × 3 inches; trimmer, 5 inches × 4 inches; and floor joists, 5 inches × 2 inches; ceiling joists and bearers for cistern over, 4 inches × 2½ inches, and 1¼ inch boarding, jointed and thicknessed for lead bottom of cistern. Fix the *quarter partitions* on ground-floor, as shown on plan, with head, 6 inches × 3 inches; upper ditto, 6 inches × 3 inches; quarters and puncheons, 4 inches × 3 inches, and rough fillets for backing of pilasters. Form gallery floors, fix wall plates 4 inches × 3 inches, and joists 5 inches × 2½ inches, notched to partition head. *Batten out iron column* with quarters and braces 3 inches × 3 inches, and piers to front with ditto 7 inches × 3 inches, or as may be required to obtain space for gear of shutters; all necessary rough fillets for backings, lathing, &c. Fix over openings at foot of stairs ascending to one-pair story, fir transoms and puncheons, 4 inches × 4 inches, with ends cut and pinned to walls at level of gallery floor, as shown in section. Fix fir framed *cradling*, 3 inches × 2 inches, *to main cornices and beams*, and 1½-inch bracketing to cornices throughout where the projection requires it. Fix ¾-inch *sound boarding* and double fillets for lime, and have *pugging* throughout one-pair floor. Fix framed bridgings where required for partitions, &c., and 9 framed blocks in ceilings for lamp hooks.

Provide 50 feet cube of fir framed more than here described, or shown in drawings.

JOINER.

Work and Materials.—Execute all the Joiner's *work*, and provide and fix all the ironmongery shown and described, and which may be required to execute any of the intended works. The *deals* and *battens* to be Christiana or Petersburgh, of the best quality, perfectly dry and seasoned, and listed clear of sap, and the workmanship to be sound, substantial, and cleaned off and finished in the most complete manner. If any of the work should shrink or yield before the last payment, it must be reinstated in the most complete manner at the expense of the Contractor, including all other work connected with it.

The *floors* to be laid with a close joint wedged up to a small rise at the doorways, and cleaned off, including replaning, if needful, at the finish of the works; the floor boards prepared and gauged within a month after signing the contract, and stacked in a dry loft; and *generally*, all the framed work to doors and wainscoting to be got out quickly, and deposited in a dry loft before it is wedged up and finished. Generally, throughout all the work, all the *glued joints* to be *feather tongued*, all grounds to be grooved, and all wainscoting and linings, or other works fixed to walls, to have backings not more than 2 feet apart, fixed to wall with spikes, wall hooks, or holdfasts. Generally, plugging to be avoided as much as possible; the parts of sash frames to be tongued together. Pulley stiles, inch wainscot outside and inside linings. Inch inside beads to be finished 1½ inch wide. All pulleys to have brass axles, strong plaited flax lines, and *iron weights;* the large sashes hung with *lead weights* and cat-gut lines; the sashes and casements dovetailed and wedged, the bottom rail of sashes and bottom inside bead to be splayed, also the rebate of all jamb linings, and the edges of doors to be splayed the same.

All the *wainscot* used to be dry seasoned Riga or Dutch wainscot, of the finest quality. Generally all junctions of mouldings and other work to be rebated to conceal the joints. All wainscot and mahogany work, and all superior work, and the treads of staircase, to be cased. All skirtings, plinths, and mouldings, &c., to be housed where they abut, and also, as well as all wainscotings, dadoes, and linings, to have tongued angles internally and externally, the mouldings being mitred, and the external angles to be mitred or staff-beaded as will be directed, and to have glued blockings. All the *ironmongery* to be of first-rate quality, the hinges wrought iron, the locks, &c., to have capital wards and superior springs, and large round knobs, and all the brasswork generally to be lacquered. All keys labelled and preserved, and all brass, ironmongery, knobs, and other superior furniture, to be covered with paper and twine.

Three-pair Story.—Inch yellow-deal straight-joint *floors*, with splayed heading joints, and mitred borders to slabs. Inch torus *skirting*, 9 inches high, and grounds throughout. To *doorways* 1¼-inch rebated and double-beaded jambs and dovetailed backings; inch framed grounds and architrave mouldings, 4 inches girt each side; 2-inch deal, 4-panel, moulded both sides *doors*, 3 feet × 6 feet 6 inches, hung with 4-inch wrought butts, and fitted with locks of the prime-cost value of 6*s.* each, including fixing.

To front *windows* 2½-inch lamb's-tongue *folding casements*, with hook joints, rebated and tongued styles, with OG moulding out of ½ inch × ¾ inch round ditto and head, and OG moulded fillet to meeting stiles out of ½ inch × 3 inches; moulded and throated water fillet to bottom rails out of 1¼ inch × 3 inches, fitted with Smith's patent *casement fastenings* and *water bars*, and hung with 3½-inch wrought butts to wrought, framed, rebated, and beaded frames 4 inches × 4 inches, grooved for tongue of stiles, with stopped hollow on outer arriss; oak wrought and framed sill 2½ inches × 2 inches; 1½-inch 1-panel, moulded window backs, and ½-inch beaded cappings; 1½-inch moulded, tongued, and staff-beaded and cross flush-beaded and grooved linings on splay, and ditto soffit with splay ends; inch framed grounds and architrave mouldings 4 inches girt.

To *back windows deal-cased frames*, extra wide oak sunk sills, and 2-inch ovolo sashes double hung, 1¼-inch tongued and rounded window boards, and architrave mouldings, 4 inches girt, to outside of frames, 1½-inch rounded nosings to dress lead to.

To all external angles square angle staves; rounded nosing to floor by stairs, and ¾-inch staff-beaded apron and backings.

Two-pair Story had the like parts minutely detailed—a modification between the one-pair and three-pair story.

One-pair Story.—1¼-inch best picked yellow *batten floors* throughout dowelled and edge nailed and mitred borders. To front rooms and passage 1¼-inch double-faced *plinth* 18 inches high, including moulding 5 inches girt, tongued to floor, and grounds and backings.

To sitting-room inch moulded plinth 12 inches high, and grounds tongued to floor. To other rooms and passages inch torus *skirting* 9 inches high, tongued to floor and backings.

Doorways of front rooms. Sitting-room to have 1½-inch double-rebated and staff-beaded jambs and dovetailed backings, 1¼-inch framed grounds, architrave mouldings 6½ inches girt, with splayed plinths, 2¼-inch, 6-panel bolection moulded both sides, double margined doors 3 feet 4 inches × 7 feet, hung with 4½-inch brass lacquered butts, with moulded knuckles, and fitted with 7-inch 3-bolt mortice locks, with ebony furniture on one side and ivory ditto on the other, 8 sets of *ivory finger-plates*, and 5 sets of ebony ditto. The large doors to ante-room to correspond, but to be 8 feet 5 inches × 8 feet 3 inches, hung on rollers, and provide a sum of 8*l.* for this purpose. The doorways to back passage and to closet to have single rebated jambs, bolection moulded, and square-framed doors, grounds, architraves, and finger-plates on one side only, but to correspond in all other particulars with the front-room doorways. *Doorway* of passage to kitchen to have similar jambs, architraves, &c., and 2 inch flush and square-framed door, covered both sides with superfine cloth, with ebony astragals to form 6 panels, hung on Smith's hinges, and fitted with furniture and finger-plates, &c., to correspond with other passage doors. Kitchen, scullery, and pantry *doorways* to have 1¼-inch double-rebated and staff-beaded jambs and dovetailed backings; inch framed grounds and 4 inch architrave mouldings where there is room; 2-inch 4-panel square-framed doors (the upper panels of kitchen and pantry doors left open, with beaded stops for glass), hung with 4-inch wrought butts, and fitted with locks of 6*s.* prime-cost value, including fixing.

In scullery partition fix 1½-inch ovolo sash 4 feet × 3 feet, in 1¼-inch rebated and double staff-beaded linings, and in pantry partition ditto, 2 feet × 3 feet, in ditto ditto. In passage partition fix a 2-inch lamb's-tongue sash, 3 feet × 3 feet, in similar linings.

Provide for extra finishings, lights, &c., to south end of ante-room, 25*l.* Front-room *windows*, frames, casements, &c., as to two-pair story, but with fixed heads or upper lights, the lower casements hung with 4-inch brass butts; 1½-inch, 4-panel bolection moulded and bead flush shutters on splay in two heights, hung with 3-inch butts to wrought angle fillets out of 2 inches × 2 inches, screwed to frames fitted with 20 brass shutter latches with ivory knobs, and five 36-inch shutter latches, 1¼-inch bead pull and square back flaps hung with 2-inch wrought back flap hinges; 1¼-inch bead butt back linings on splay; 1¼-inch staff-beaded proper boxings and architraves, 10 inches girt; 1¼-inch bolection moulded window back and splay elbows; ½-inch beaded cappings; 1½-inch bolection moulded soffit, with splay ends; elbow caps, blind rails, &c. *Back windows*, including back passage and stairs windows, sashes and frames, as to two-pair, but the kitchen to be Venetian, with side lights fixed; to three of the windows 1¼-inch moulded and bead butt shutters on splay, hung with 3-inch wrought butts, fitted with brass shutter latches and knobs and japanned shutter bars; inch bead butt and square back flaps, hung with 2-inch back flap hinges; 1¼-inch bead butt back linings on splay; 1¼-inch square framed backs and elbows; ½-inch beaded capping, elbow caps and blind rails; 1¼-inch moulded soffits, with splayed ends; 1¼-inch proper staff-beaded boxings on splay, and architrave mouldings 4 inches girt. To kitchen window similar finishings and fittings, but square framed, ¾-inch narrow returned beaded linings and backings.

To kitchen chimney fix 2-inch deal shelf, with rounded corners and 4 cut brackets. In kitchen and scullery fix 2 inch *deal dressers*, 7 feet and 6 feet 3 inches long respectively, 8 feet high, with 3 drawers each and wood handles, pot-boards under and 3 shelves over, with standards and fascia to each, and lined at backs with ¾-inch matched and beaded boarding. In scullery and pantry fix *sinks* under windows, with 1½-inch ploughed and tongued bottoms and dovetailed rims on wrought and framed legs and bearers, 3 inches × 2 inches; inch deal draining shelves on each side of sink in scullery on wrought and chamfered bearers, and in pantry 1¼-inch beaded frame and mitre clamped flap over sink, hung with 3-inch brass butts; 1¼-inch framed and beaded front and square framed folding-doors under sink, hung with 2½-inch wrought butts, and fitted with 4-inch neck bolt and closet cock. *Provide* for extra shelves and plate-rack in scullery and pantry, *5l.* prime cost.

Form a closet by pantry with 1½-inch square framed partition, and door hung with 3½-inch wrought butts, fitted with closet lock and chamfered stops; inch two sides and cross-tongued shelves (2 tiers), with framed ends and chamfered bearers; inch one side matched and beaded top, wrought and chamfered bearers, and 4-inch moulded capping. Fit up the closet next dining-room with similar shelves, top, and moulding, and inch one side staff-beaded lining. Provide for *lift and fittings* from basement to one-pair, including linings, doors, &c., 15*l.* prime cost.

Stairs up to two-pair same as described from two to three-pair, but with open well and continued rail, 3 inches × 2½ inches; 4 cast-iron balusters to match wood ditto, with strap ends let in and screwed; ¾-inch staff-beaded apron and moulded nosing. To *water-closet* and *lavatory* off stairs lay 1¼-inch yellow batten, straight joint floor; fix inch torus skirting 9 inches high, and grounds; sashes and frames as to back rooms; inch one side tongued and staff-beaded linings, and 1¼-inch tongued and rounded window boards and bearers. In lavatory 1¼-inch framed and beaded dwarf closet front, and moulded and square door, hung with 2½-inch butts, and fitted with brass knob turnbuckle; divide from water-closet with 2-inch, moulded both sides, partition and door, hung with 3½-inch butts, and fitted with brass mortice latch and 6-inch brass private bolt. Fit up water-closet with Spanish mahogany, as described to upper water-closet; provide for pipe casing, 15*s.* prime cost. *Entrance from stairs.*—1½-inch rebated and double-beaded jambs and dovetailed backings; inch framed grounds, and 7-inch architrave moulding; 1½-inch moulded both sides, 2-panel folding-doors one half fixed as framing; the other hung with 4-inch wrought butts, fitted with brass mortice latch, with ebony furniture, and 6-inch brass barrel bolt.

Ground-story.—1¼-inch yellow batten straight joint *floors* throughout, dowelled and edge-nailed, with mitred borders to slabs; apron linings and backings, and rounded nosings to wells; 1½-inch wrought and strongly ledged folding flap over stairs to strong rooms, hung with 1½ pair of 24-inch cross garnets, fitted with 2 strong iron rings, and a Chubb's 4-inch brass patent lock. To all rooms and apartments fix inch torus *skirting* and grounds 9 inches high, tongued to floor.

Fit up Manager's *water-closet* with Spanish mahogany seat, &c., &c., as described to water-closets up stairs. Divide water-closet from lavatory with 2-inch deal partition, and door bead flush both sides; the door hung with 4-inch wrought butts, brass mortice latch, and 6-inch brass private bolt. *Enclose* the spaces under basins, in both Manager's and Clerks' *lavatories,* with 1¼-inch framed and beaded closet fronts, and bead flush and square folding-doors, hung with 2½-inch wrought butts, and fitted with 4-inch neck bolts and brass knob turnbuckles, wrought and framed bearers, 2½ inches × 2 inches, for slate tops.

Fix *stairs* to ascend to gallery as follows:—1¼-inch steps and inch risers, with rounded nosings; 1¼-inch square wall strings, 2½-inch square framed newels and wainscot handrail, 2½ inches × 2 inches. Lay the *floors of water-closets* in yard with 1¼-inch yellow batten; to entrances, 1½-inch deal, 4-panel, bead flush, and square doors, hung with 3½-inch wrought butts in fir, proper door cases, 4½ inches × 3 inches, with OG mouldings round the same; fit doors with brass mortice latches and 6-inch brass private bolts. Fit up these *water-closets* with seats, &c., as water-closets up-stairs, but of Honduras mahogany.

To the *bank entrance* from lobby, 2¼-inch *wainscot,* 4-panel *swing doors,* bolection moulded and raised panels both sides, diminished stiles, and upper panels open for glass, with mouldings to shift, screwed in with brass screws and collars; the mouldings to girt 3¼ inches; the doors to have rounded edges, and bold staff beads, on stiles, to be hung with Smith's patent *swing hinges;* 2¼-inch wainscot, hanging stiles, 2¼-inch wide, hollowed for doors, and with splay edges to form quirk; framed head to correspond; fix to doors No. 4 12-inch handsome bronzed door handles, of approved pattern. To the larger opening in Manager's room 2¼-inch *wainscot doors* to correspond, but fixed as framing. To private room and Clerks' room entrances 2¼-inch *wainscot,* 4-panel *double-margin doors,* upper panels open, with diminished stiles, and corresponding in all other respects with entrance doors and finishings from lobby, but no handles; mortice locks 12*s.* prime cost, exclusive of fixing. To the 6 other openings in these rooms, doors to correspond, but fixed as framing; 4 of them circular on plan. To entrances to Manager's room, waiting-room, and Messenger's room, *double-margin doors, &c.,* as to private and Clerks' rooms, but circular on plan, and 2-panel fixed framing to correspond.

In the partition between lobby and Messenger's room, fix a 2-inch deal lamb's-tongue sash, 2 feet 6 inches × 3 feet 6 inches in 1¼-inch rebated and double staff-beaded linings. To partitions dividing bank from Manager's room, Clerks' room, and other apartments on east and west sides, fix inch deal plain pilasters, 6 inches wide, with inch and 1¼-inch returns, and rebated and mitred angles; moulded bases 5 inches girt, with returns; moulded caps, 6 inches girt, and cross necking grooves; inch deal plain plinths, 7 inches high, with rebated and mitred returns; inch deal middle pilasters, or grounds, 5 inches wide and rough fillet backings, inch deal one side, and cross-tongued frieze and soffits; deal moulded cornice and bracketing, and 1 inch deal one side cover board, inch deal one side blocking and cover.

Doorways between private room, Manager's room, and waiting-room, to have 1¼-inch rebated and double-beaded jambs, and dovetailed backings; inch framed grounds, and 4 inch architrave mouldings; 1½-inch deal 4-panel doors, moulded both sides hung with 4-inch wrought butts, mortice locks, and wainscot furniture. To Clerks' lavatory, jambs, door, &c., as last; but upper panels open, with shifting mouldings for glass. To *yard,* fir proper *door* case 5 inches × 4 inches; 2-inch deal, 4-panel, bead flush both sides door, hung with 5-inch wrought butts, lined inside with sheet iron, fitted with 10-inch strong iron rim lock, two 10-inch barrel bolts, chain, and barrel. To *doorway* from Clerks' room to private staircase, 1¼-inch double-rebated and double staff-beaded, framed and moulded panel jambs, and dovetailed backings; 2-inch deal, 4-panel, moulded both sides door, circular on plan, upper panels open, with shifting mouldings for glass; hung with 4-inch wrought butts, and fitted with mortice lock and furniture. To gallery-stairs doorway, 1½-inch rebated and staff-beaded jambs, 1¼-inch wainscot, bead flush, framed door, hung with 3-inch butts, and fitted with mortice latch and wainscot furniture. To closets in private-entrance passage, 1¼-inch rebated and staff-beaded linings, and 1¼-inch deal flush framed doors, hung with 3-inch wrought butts, and fitted with closet locks. To inner private-entrance doorway, 2-inch, moulded both sides, 4-panel folding-doors, hung with 4-inch wrought butts, and fitted with rebated mortice lock, and two 12-inch brass flush bolts; 1½-inch double-rebated and double staff-beaded jambs.

Trim the ceiling over this entrance; fix inch staff-beaded linings, rebated for rough plate glass, 2 feet 3 inches square, ground on one side.

To *outer front entrances*, fir rebated and beaded frames, 6 inches × 5 inches, with circular heads, and wrought, framed, and beaded and moulded panelled transom, strongly put together with oak keys, wedges, &c.; 4 deal moulded consoles on frame, 6 inches on face, 14 inches high, with sunk panel; 3-inch *oak folding-doors* (in 10 panels), bolection moulded and bead flush; the mouldings 4½ inches girt, and panels raised on one side; hung with 6 pairs of 5-inch wrought butts, and fitted with 12-inch drawback locks, four 12-inch and four 36-inch barrel bolts; stud the fronts of doors with iron astragal headed screw pins, 1-inch diameter (about 304 in all). Over transoms fix 2-inch deal lamb's-tongue semi-headed sashes, with all necessary beads, stops, &c., complete.

To aperture by stairs foot, fix 1½-inch double staff-beaded linings; 1¼-inch 1-panel moulded transom; 1¼-inch rebated lining, and inch square skirting 6 inches high; 2-inch deal lamb's-tongue semi-headed sash, with margin lights, bead stops, &c., complete. To water-closets, No. 3 1½-inch deal ovolo casements, 9 inches × 2 feet, hung on centres, in fir solid frames, 3 inches × 3 inches, with oak sunk sills, and fitted with brass knob turns; inch tongued and staff-beaded linings, and 1¼-inch tongued and rounded window boards. To front windows 1¼-inch deal moulded window backs, in 3 panels, prepared to shift, but fixed with screws, and 1¼-inch moulded window boards; inch deal bead flush casing and doors (to enclose working gear, &c.); the doors hung with 12 pairs of 3-inch brass butts, and fitted with 12 brass knob turnbuckles; inch deal, one side tongued and staff-beaded soffits and backings. (For remainder of work to windows, *see* Smith, &c.)

Stairs up to One-pair.—Spanish mahogany moulded *handrail*, 3 inches × 2½ inches, with 3 scrolls, ramps, wreaths, &c., as shown on plans, including a length to meet iron railing of basement stairs. (For railing, balusters, &c., *see* Smith.) To upper part of back stairs, a short length of mahogany handrail, 2½-inches × 2 inches, with short ramp circular end, and turned and mitred cap. (For rest, *see* Smith.)

Basement.—Lay the *floors* of Porter's room and deed room with inch deal folding (on the ground joists and sleepers, described with Carpenter). To deed room, 1¼-inch rebated and beaded jambs, and rough blockings; 2-inch deal, 4-panel, square-framed door, hung with 4-inch wrought butts, and fitted with 6-inch iron rim lock. To wine-cellar, similar jambs, and 2-inch deal, 4-panel bead flush square door, hung with 4-inch wrought butts, and fitted with a copper-warded wine-cellar lock. To *Scullery*, 2-inch deal square-framed sash partition and door, upper part cut circular to arch, the door hung with 4-inch wrought butts, and fitted with a 6-inch rim lock, and all requisite rebates, stops, &c.; wood shelf and cut brackets to chimney; stout deal cover to copper; 2-inch deal, 4-panel, bead flush and square folding-doors to area doorways, hung with 4 pair of 4-inch wrought butts; iron rim locks, as last, and four 12-inch barrel bolts; all necessary jamb linings, &c.; fir proper doorcases, 4 inches × 4 inches; 1½-inch one side ploughed and tongued cistern bottom, and dovetailed sides; fitted with two ⅝-inch wrought-iron bolts, 20 inches long, with heads and nuts. To *Porter's room*, 2-inch partition and door, &c., as described to scullery, 1¼-inch framed and beaded closet front, and doors each side of chimney in 2 heights; doors hung with 3-inch wrought butts, and fitted with closet locks, No. 12; inch deal two sides, and cross-tongued shelves, and wrought and chamfered bearers; a 2-inch deal dresser, 5 feet long, with match lined back, &c., &c., as described to kitchen, one-pair story; shelf and brackets to chimney, as ditto, ditto; 1½-inch two sides, deal shelf in recess of shoe and knife place, with rounded corners and ends, cut and wedged to wall. To *Larder*, 1¼-inch rebated and double-beaded jambs and rough blockings, 1½-inch 4-panel bead flush and square door, upper panels filled in with perforated zinc and wrought fillets; the door hung with 3½-inch wrought butts, and fitted with closet lock, inch rebated and double rounded linings to small window aperture, filled in with perforated zinc and wrought fillets.

To *vaults*, fir wrought, rebated, and beaded jambs, 4 inches × 3 inches, and 1¼-inch proper ledged doors, hung with 18-inch cross garnets and fitted with Norfolk thumb latches. No. 2 sets of inch deal *water-closet seats*, risers, and bearers, with mitre clamped flaps and beaded frames, hung with 3-inch brass butts; hole for seat and ditto for stool cock; ¾-inch deal square skirting 4 inches high and narrow grounds; the seats, &c., made to shift. Enclose these *water-closets* with 1½-inch deal square framing, and doors hung with 3-inch wrought butts, fitted with Norfolk thumb latches and 6-inch bolts.

Provide for dust bin 4*l.* prime cost.

To front and one of back *windows, deal-cased Venetian frames,* oak sunk sills, and 2-inch ovolo sashes; the centre lights double hung with lines, weights, &c., &c., as before described, and fitted with brass roller fastenings, tongued and rounded nosings, and 4-inch architrave mouldings. To the remaining back windows deal-cased frames, sashes, &c., as last, but not Venetian.

Back of House.—To flat over back part of two-pair story, fix 2-inch deal ovolo skylight, 8 feet 6 inches × 3 feet 6 inches, with splay edges, in 4 squares, with inch deal one side and staff-beaded linings to spandrils, apron linings, and backings, fir framed kerb 4 inches × 4 inches, &c. To centre flat over back part of bank fix fir kerbs, 4 inches × 4 inches, with fir ashlaring, 2 inches × 3 inches, and No. 3 2½-inch deal ovolo skylights, 9 feet × 3 feet 6 inches, with splay edges, 1½-inch deal, bead flush, spandril framing; and provide for ventilators in same, and lines and pulleys, 3*l.* prime cost.

Generally to execute sundry Joiner's works beyond what is described, to the extent in value of 200*l.*

PLASTERER.

Work and Materials.—Execute all the plastering described, and all Plasterer's *work* needful to complete the intended works. All the *lime* to be well screened and mixed with a sufficient quantity of back hair. All the *laths* to be 1½ laths, and fixed with wrought-iron nails.

Dub out with tiles and cement, or spikes, twine, and plaster, where needful. To run all beads, cut all quirks, and form all arrisses. All enrichments to be to choice, and fixed and centred with proper mitred angles. All sound boarding to floors to be pugged 2 inches thick.

Three-pair Story.—Lath, plaster, flote, and set ceilings and partitions; render, flote, and set walls; twice white the ceilings.

Two-pair Story.—Lath, lay, flote, and set ceilings, partitions, and strings of stairs; render, flote, and set walls; run plain plaster cornices to rooms 9 inches girt, and ditto to passage and stairs 6 inches girt; twice distemper, white the ceilings, strings, and cornices. To all external angles of walls, run *Keene's cement* square *angle staves,* and to ditto of partitions, run ditto rounded ditto.

One-pair Story.—Lath, lay, flote, set, and twice distemper white, all the ceilings, strings of stairs, and cornices; lath, lay, flote, and stucco all the quartered partitions; render, flote, and stucco walls, run *Keene's cement staves* to all external angles; twice distemper colour kitchen, scullery, pantry, closet, and back passage. To circular back passage, run Keene's *cement skirting,* 6 inches high, and ditto reveals to windows. To front rooms, run plaster *cornices* 30 inches girt, and fix in same 2 *enrichments* 4½ inches girt, and enriched soffit 6 inches wide; form the plaster *soffits* across rooms, and run to ditto plaster *cornices,* 15 inches girt, with enrichment and soffits as to main cornices, but single. To passage and landing, run a plaster *cornice* 18 inches girt. To sitting-room, run a plaster *cornice,* 18 inches girt, with 2 enrichments 5 inches girt each.

Ground Story.—Lath, lay, flote, set, and twice distemper white, ceilings of water-closets, and urinary in yard; *line the sides of water-closets with white china tiles* on a floted ground; render and flote the sides of urinary with Portland cement, returned in reveals of openings. Lath, lay, flote, and set in *Keene's cement* all other *ceilings* of ground-story, and twice distemper white the same and cornices. Run *Keene's cement cornices,* 9 inches girt, round private room and Manager's room, and ditto ditto 12 inches girt round private-entrance passage. Run the several cornices, fascias, moulded soffits, &c., in Keene's cement, to form the main ceiling with panels as shown.

Lath, lay, flote, and set in Keene's cement all quarter *partitions,* battening, &c., and render, flote, and set in ditto all brickwork; form the several moulded and plain *pilasters,* the moulded caps and bases, plinths, &c., &c., as shown, and corresponding with those formed in Joiner's work.

To aperture at foot of best stairs, fix 2 plaster *trusses,* 6 inches on face, 6 inches projection, and 1 foot 9 inches long. Run to all rooms, also to private-entrance passage and staircase, 9-inch moulded *skirting in Keene's cement,* and ditto ditto to raking stone steps. Render and flote with Roman cement the insides of book-rooms, and the whole of back staircase, and form jambs with splays, staff beads, and double quirks to openings.

Basement.—Render and flote with Roman cement, jointed and twice coloured, the walls and arched ceilings of deed room, and Porters' room. Point and twice limewhite all other walls, ceilings, and arches, including front vaults.

Provide for sundry extra Plasterer's work, beyond what is described in specification, the sum of 30*l.*

Dub out and make good face of *old party walls*, where they show in return at east and west ends of front; render, flote, and finish same with Portland cement, coloured and jointed to imitate stone, and form narrow returns arrisses to same.

PLUMBER.

All the lead and pipes to be milled from the best Newcastle pig, marked WB; all pipes to be strong. All socket and soil-pipes to be made of 7-lb lead. All solder to be of best quality, the joints neat, strong; and provide and fix all nails, screws, tacks, hooks, lead-headed nails, and every article to make the whole complete. Lay all gutters and flats with 8-lb. lead, and fix all other coverings, flashings to skylights, &c., of 6-lb. lead, other flashings of 5-lb. lead; and execute all Plumber's work, externally and internally shown and described, or needful to complete the building.

Fix to main roof 6-inch cast-iron eaves gutter (about 14 feet run), with 2 stopped ends, and 1 outgoing. Fix at 2 deliveries from main roof, 4-inch cast-iron rain-pipe, with heads and shoes. Fix at ditto from upper back roof ditto ditto with ditto ditto; fix to lower flats 4-inch cast-iron semi eaves gutters, and brackets, with stopped ends, and outgoings, &c., and 4-inch cast-iron rain-pipes, with heads and shoes to carry water on to side flats, and from thence to drains in basement.

Provide the lead *bearings for columns* and stancheons, and perforated zinc for panels.

Line *cisterns* with milled lead and soldered angles, 9-lb. bottoms and 7-lb. sides, and wood sinks and draining shelves with 10-lb. lead, 1½-inch trumpet stand pipes, and 1¼-inch washers and wastes, 1½-inch waste pipes to nearest closet or trap, 4-inch brass grates and bell traps, and 3-inch waste to sinks.

On two-pair story fix a best patent *pan closet apparatus*, with large blue and white basin, best lacquered brass work, ivory handle, &c. complete, inch-service and 1¼-inch waste D trap, water-box valves, 4-inch patent drawn soil-pipe, ½-inch air-pipe, &c. Fix a *lead safe* under water-closet with small D trap, and waste pipe and weeping ditto for service.

No. 1 best japanned *copper bath*, including mahogany French-polished framing and capping, 3 cocks with brass lever handles, engraved "hot," "cold," "waste;" lead safe dripper under the bath, with trap and service pipes to supply the bath with hot and cold water, the hot water to be supplied from boiler of kitchen range; the whole executed in the best possible manner with inch service and 3-inch waste. Cut away and make good where requisite for works appertaining to bath, &c.

On one-pair story ¾-inch services to sinks, ¾-inch bib cocks and bosses, ½-inch service to boiler of range, and ½-inch ball cock, ball and boss.

Fit up *water-closet, safe*, &c. on stairs, the same as ditto on two-pair story. In lavatory by ditto fix a 12-inch blue and white basin with Underhay's patent supply cock, with waste arm-washer, plug and chain, ½-inch supply pipe from cistern, and 1½-inch waste pipe into trap. On ground-story, a best *water-closet, safe*, &c. as above, by Manager's room. Fit up lavatories with basins, cocks, &c. as above described, but with 3-inch waste pipes. To *water-closets* in yard fix best pan closet apparatus as described, but with white basins, union screws and valves to cistern over, service and waste pipes, &c., as described to other water-closets; lay on inch service to urinal, with 1-inch stop-cock, with lever handle; inch copper tinned perforated pipe, with stopped ends and brass T piece, 1-inch brass union, &c.

Basement.—Cistern lined as others, enclose bolts with inch pipe and joints, ¾-inch services to sinks, ¾-inch bib cocks and bosses. *Water-closets* in vaults fitted up with Doulton & Watt's glazed earthenware closet pans and traps, ¾-inch service, ¾-inch stool cocks.

Provide for Plumber's work beyond what is described the sum of 30*l.*

Lay on *services* as follows:—1¼-inch to *slate cistern* over Clerks' water-closets, 1¼-inch to cistern in scullery, ditto to ditto over Manager's water-closet, water-closet on stairs and ditto on two-pair story, two *rising mains* and two 1¼-inch ferules in street main, a stop cock, and a ball cock and ball to each main service, and to each branch ditto.

GLAZIER.

Work.—Execute all the glazing shown and described on the drawings and in this specification with other works, all to be of the best quality and of an even colour, to be well puttied, and indoors, &c. to have wash leather.

Glaze with seconds crown the sashes in basement; *glaze* with best crown the sashes of back rooms on two and three-pair stories and the fixed sashes in the several partitions on one-pair story. *Glaze* with *Chance's* best 21-oz. *patent plate* all the front windows above ground-story, the sash in entrance and the inner door of Clerks' lavatory; glaze with 16-oz. ditto ditto the windows of back rooms one-pair story. *Glaze* with best *British plate glass* ¼ inch thick all the wainscot doors and fixed framing on ground-story, part bent circular, the circular-headed lights over entrance doors, and the large segmental-headed windows of bank, except the upper parts of side lights, which are to be filled in with *Lockhead's patent perforated plate glass*, polished on both sides. Glaze with 21-oz. fluted plate the sash doors on one-pair story, and all the back and end side sashes of bank. *Glaze* with rough plate ¼ inch thick all the skylights; glaze with rough plate ½ inch thick the well hole of back staircase (in one sheet) and the ceiling light in private-entrance lobby, the latter ground one side. *Glaze* with *Long's patent engine-turned glass* the sash doors on two-pair story, the fixed sash in passage partition one-pair story, the sashes of water-closets, the circular-headed light at south end of west gallery in bank, and the door from Clerks' room to staircase.

Leave all perfect and clean at completion.

PAINTER.

Materials.—The *paint* to be composed of purified oils and turps, strong old *white lead* well ground in oil and mineral, or other durable colours; the *varnish* to be the best copal.

All *ironwork* in sight to be painted four times in oil colour. All the *woodwork* generally to be twice knotted, primed and painted in addition 4 times in oil colour, finished with such plain tints as shall be directed, the two-pair story to be extra flatted in two shades. All the *Keene's cement* and other work on ground-story to be extra flatted a tint. All the *door faces* (adjoining passages) on first and second floors, and also adjoining stairs and landings, also external door frames of front, to be extra *grained wainscot* and *twice varnished.* All *plinths* and *wall strings* to stairs, landings, passages, bank and offices to be *extra marbled* imitation dove marble, and *twice varnished.*

All the *sashes* and *sash frames* to front of house (above basement and not otherwise described), also the iron shutters, to be extra finished as *bronze green*, and *twice varnished.* The ornamental *iron railing* in bank and to principal staircases, also the large iron Venetian frames to be extra finished *bronze green*, bronzed and twice *varnished*. All the ironwork painted is to be previously carefully cleaned off and filled up to smooth surface.

All wainscot work to be sized and twice varnished. All mahogany ditto to be French polished.

All floors to be cleaned before the last coat of paint.

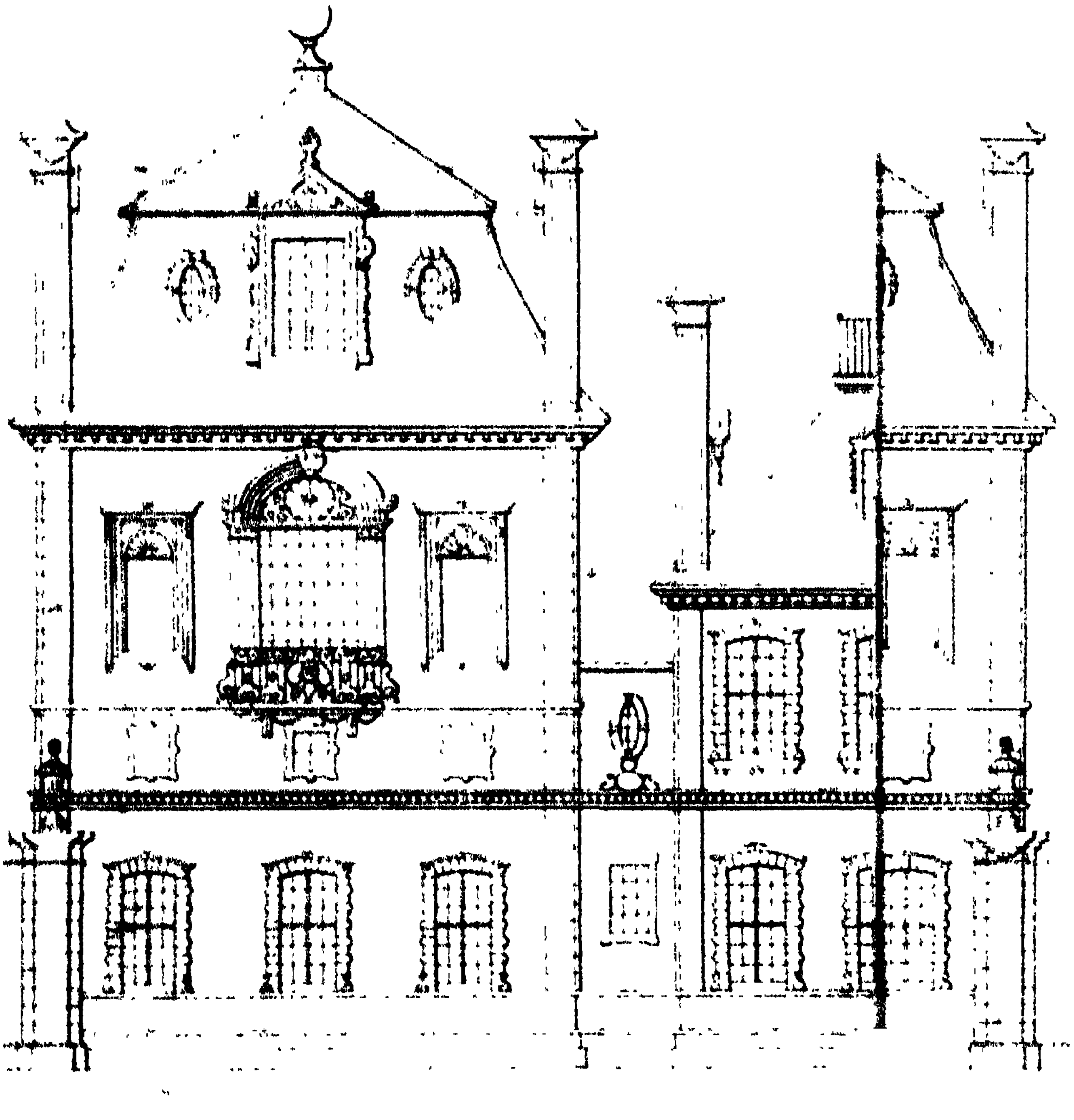
Provide for extra Painter's and Decorator's work 100*l.* beyond what is herein described.

PAPER-HANGER.

All walls to be properly sized and prepared before papering. Paper to be cut close and to be to choice.

To all rooms and passages on *three-pair story* hang a 3*d.* paper. To *best room* on two-pair story, and to sitting-room on one-pair story, hang a 6*d.* paper and *double elephant lining*. To other front rooms a 4*d.* paper, and to back rooms a 3*d.* paper. To *front rooms* one-pair story *hang decorations* of the average value of 2*s.* per yard, including lining paper, &c.

To private-entrance passage on ground story, principal staircase, water-closet, lavatory, long passages on one and two-pair stories, and the stairs from two to three-pair stories, line with *double elephant*, and hang a 6*d.* floated *marble paper* in extra wide blocks, jointed with pencil sized and twice varnished.



Specification for the Erection of the WELLINGTON COLLEGE, *near Sandhurst, Berks.* JOHN SHAW, *Architect.* 1855-9.

N.B.—This specification was made out with remarkable fulness of every distinct part, many of which are omitted in this digest. This minuteness of detail is very useful in carrying out the construction, as it affords precise instructions to the Builder and Clerk of the Works; so that the execution may accord with the precise scantlings upon which the bills of quantities have been framed by the Surveyors.—T. L. D.

EXCAVATOR.

The *whole of the surface* soil for a depth of 12 inches to be *removed* from the area of the site enclosed within side fence walls, and the north front terrace wall line, also the line of 10 feet beyond the line of the south front; the upper soil, where the several slopes are formed, to 5 feet beyond the above enclosing lines, is to be removed in the same manner, the whole being deposited upon convenient spots clear of the site within a mean wheeling distance of 37 yards; and it is to be returned to form the surface of the several gardens, where it is to be deposited and levelled, the mean distance of this last wheeling being 49 yards; the top level of these gardens is to be 6 inches under the ground-floor line.

The north-east angle of the building is to be the *datum point* for starting the levels, from there the present surface is to be the reformed level of the general finished surface.

The general surface, where above this datum point after the removal of the top 12 inches, is to be dug, wheeled, and deposited, so as to bring up the levels of the north-west portion of the ground; this digging is to extend 5 feet beyond the line of the fence walls on the east and west sides, and 10 feet beyond the centre of the fence walls on the south front; from these points the surface is to be cut back, so as to form an angle of 45° slope from the general levelled surface. The *spoil earth* is to be deposited so as to form up the levels of the low side slope of the natural surface; it is to be kept clear of the foundations of the several walls where the concrete is raised on the ground surface in such manner as to avoid unequal pressure, while at the same time concrete foundations are to have sufficient support on all sides the spare earth, after the area within the walls is made up, to be deposited in equal parallel lines to the fence walls; the slopes being kept at an angle which is to be regular in its whole length on the several sides. The whole of the surface of this spoil earth is to be well levelled and filled up as required, the gardens being kept down so as to allow 18 inches of the before-mentioned top soil being deposited thereon.

The *trenches* for the several footings and concrete foundations are to be sunk below the natural and datum surface as required, the width of the several trenches for the brick footings being such as will allow of the free working of the walls, and to be of one general level throughout for all the walls, except those of the cellars. The *trenches for the concrete* are to be formed with *jumps*, in length of about 12 feet, each jump being level in its own length. The *cellars and vaults* are to be formed where shown on the plan, the excavations having sufficient batter to retain their sides; while the concrete and footings are being put in those of the tower, and all other parts where there may be land springs, are to be done in short lengths.

The excavation for the *cross tunnel* between the towers is to be formed in the same manner, care being taken, if necessary, by means of struts or otherwise to secure the sides. The *surfaces under the wood floors* are to be excavated to the level of the top of the second course of double footings; the bottom of the coal-stores is also to be excavated to the depth of 3 feet 6 inches from the finished surface round the building; the recess for the hot closet in the laundry is to be executed in the same manner.

The *trenches for the several drains* are to be formed in the direction shown on the plans, the entrance being in all cases as close to the surface as possible, and the general fall, when clear of controlling circumstances, is to be not less than 1 inch in 10 feet. The *rain-water drains* are in all cases to be carried above the level of the foul-water drains where they cross each other; these rain-water drains are all to lead into rain-water tanks, of which one is to be placed in front of the offices of the Head Master and Secretary, and another on the west side between the tower and the infirmary, and another in the kitchen court-yard, double the capacity of these last mentioned, and the one on the west side the same size as the one in the kitchen court-yard. The *foul-water drains and culverts* are to have trenches excavated for them in the positions and directions shown. Two tanks are to be formed at a distance of 50 feet the fence walls—one on the north-east side of the north front the line of the centre of the side gateway, the other in the line of the west privy culvert. The overflows from these tanks are to be close to the surface, and to run into a surface trench after having 10 feet of pipe to each. The *footings to all the walls* are to be filled round solid and rammed previously to the walls being brought up, and every fourth course that is under ground in the vaults is to be rammed with clay which is to be selected for that purpose.

Covering Drains.—All the drains are to be covered over in a careful manner, care being taken not to break the pipes. The *water supply pipes*, where outside the building, are to have the ground opened for them to an average depth of 2 feet, and after they are tested they are to be covered over.

The *several surfaces are to be properly levelled* where they are within the walls or in the gardens; the several quadrangles and court-yards are to be formed to fall as shown for the escape of the rain-water; all the surfaces of the made ground are to be well rammed, especially round the foundations of the several walls, and under the several cement and concrete floors, also under the arcades and quadrangles. The whole of the *spoil earth*, and all the rubbish that may arise during the progress of the works, is to be removed —the earth to the slopes outside the fence walls, and the limestone and brick rubbish being used under the quadrangle cloister, or the cement floors in the offices; the whole of the surface both within and without the buildings, and all mounds caused by any works connected with the buildings, are to be levelled, and all holes filled up, so that the surface shall be uniform. The *trenches for hot and cold-air flues* are to be formed in the positions shown on the plans, the bottoms being laid with a fall towards the towers, the sides are to be carefully filled in again; the whole being done especially under the direction of Messrs. Haden, who will instruct the Clerk of the Works with their wishes in this matter.

CONCRETE.

Proportions.—The concrete for the foundations is to be formed of ground stone lime and coarse gravel, that under all floor, &c., to have well-screened, fine gravel, instead of coarse; both are to be well mixed, and in the proportion of one of lime to six of gravel, well mixed while dry, and when wetted that for the foundations is to be shot from a height of at least 6 feet. The concrete *under the external walls of the towers* is to be 5 feet 6 inches wide and 3 feet thick, that under the middle wall of buttresses 5 feet 2 inches × 3 feet; the concrete for the external walls of the *beer-cellar* to be 5 feet 6 inches × by 3 feet; the end wall 5 feet 2 inches ×

feet, and the cross walls 4 feet 10 inches × 3 feet. The concrete for the *wine-cellar* thick walls 5 feet 6 inches × 3 feet, and cross walls 4 feet 10 inches, and 4 feet 6 inches × 3 feet thick.

The *general surface* between the concrete under the walls in the tower, beer-cellar, and wine-cellar, is to be carried with a bed of concrete 18 inches thick. The *walls of the west dormitories* that are north of the tower are to have concrete foundations formed in jumps of 4 feet 6 inches and 3 feet 9 inches widths, and all of 2 feet 6 inches thick. The *screen wall* at the west end of the north front, and the kitchen offices of the Secretary's apartments, are to have a concrete foundation of 3 feet 9 inches × 4 feet high. The *centre building* is to have concrete foundations 4 feet 2 inches, 3 feet 10 inches, 3 feet 6 inches, 3 feet 2 inches, 1 foot 11 inches, and 1 foot 2 inches, according to the thickness of the walls, and all to have a mean depth of 18 inches.

The *fence walls* on west side are to have concrete foundations of 4 feet 7½ inches × 3 feet 3 inches, of a mean width and depth; they are to be formed with jumps to suit the fall, and built between boards, they being equally filled in with the wheeled earth so as to have equal pressure on both sides. The *return wall* against the west side of the tower is to have a foundation of 3 feet 3 inches × 4 feet 1 inch on an average; the north wall of the privy yard is to have a foundation of 3 feet 5 inches × 3 feet 3 inches. A concrete foundation of 4 feet 3 inches × 1 foot 3 inches is to be formed under the privy culvert and its outlet. The fence and office walls of the Secretary's apartments, north-west angle, are to have foundations of concrete; the external walls 3 feet 3 inches × 6 feet 2 inches, the internal walls 2 feet 9 inches × 5 feet 10 inches, and the return to the north front 3 feet 3 inches × 5 feet 10 inches, which are to be built between boards, as before described.

A concrete foundation to be formed *under the chimney shaft* of the engine boilers, 12 feet square and 4 feet thick. A concrete floor is to be formed to the *beer-cellar* 6 inches thick, well beaten down and smoothed on top; a concrete bed 4 inches thick is to be formed to receive the cement floor of the *wine-cellar* to north front. A concrete bed 4 inches thick is to be formed *under the whole of the wood floors* on the ground-story, the bottom of which is to be placed at the level of the top of the second course of double footings. A concrete bottom 4 inches thick is to be laid in all the *arcades and openings* to staircases, and is to be covered with a floted surface of fine concrete ¾ inch thick, prepared to receive *Orsi and Armani's Patent Metallic Lava.* Those parts that may be finished with *asphalte* are to be prepared in the same manner as for the lava, and where they are external they are to be sloped and weathered. The *cement floors* on the ground-story are to have a concrete bottom 4 inches thick, properly levelled and laid to meet the general surface. The floors of the *coal-stores* and the *drying closet* are to be formed of a bed of concrete 6 inches thick, well rammed and beaten level. The floor of the *tunnel* between the towers is to be formed of concrete 6 inches thick, carefully laid round the drain pipe in the bottom.

The floor of the tunnel between the 2 towers is to be formed of concrete 6 inches thick, which is to be carefully laid round the drain pipe in the bottom.

BRICKLAYER.

Materials.—The *bricks* used are to be all of equal quality with the sample provided by the Governors for general use; the bricks for the rubbed facing are to be from an approved Reading maker. The *mortar* is to be made from Dorking or Merstham lime, and the sharpest of the sand from the neighbourhood; it is to be mixed, in the usual proportions, in a pug mill; it is, in all cases, to be used fresh from the mill, and no more than one day's consumption is to be made at one time. The *cement* is to be from approved manufacturers and of the best kinds, and, in all cases, unless described as neat, to be mixed in equal proportions with clean washed sand.

The *work* is, in no case above ground, to rise more than 12 inches to the 4 courses; the facings are to be picked from the general quantity of the bricks of a uniform dark colour; they are to be laid Flemish bond, the face being set with blue ash mortar in a neat flat struck joint; every fourth course is to be grouted, in doing which great care must be taken not to allow the grout to run over the inside or outside faces of the several walls.

The *vaults* at the basement of the towers are be formed as shown on the plans and sections with 3 double course of half-brick footings; the walls, up to 3 inches below the ground surface, are to be 3 bricks thick. The centre wall is to be 2½ bricks thick; the centre wall is to be fitted with 4 openings, having an average of 5 feet 10 inches wide × 8 feet high, the inverts under these and the arches over are to be in 3 half-brick rings. The back wall of the arcade is to be in 1½ brick, and is to have openings in the same of an average size of 9 feet × 8 feet. The cover of the vaults is to be in 1½-brick arches, an opening of 10 feet × 4 feet is to be left in one of these arches for the stairs down; the *skewback* where the opening comes is to be formed, with a *cast-iron plate* 12 feet 4 inches long and 15 inches wide, in inch metal, with a centre rib of the same 4½ inches wide on one side; the centre of this girder skewback is to be fitted with a tie-rod of inch round wrought iron having double nuts and washers, and disks of ¾ average cast iron 12 inches × 9 inches surface, one to clip the off-side of the centre wall, the other the centre of the metal spandril; the *spandril haunches* of the arches, to the average of 18 inches × 9 inches, are to be filled in solid. All the foregoing arches and their skewback courses are to be executed in cement; the openings to the tunnel and to the coal-store area are to be formed as shown; the bottom step is to have a 9-inch bearing wall; the spandril under the stairs and up to the arch over with the 2 end cross walls are to be done in 1-brick walls; in the front towards the vault the spandril is to be fitted with an opening 5 feet × 5 feet. All the several openings required by the Messrs. Haden for their *cold and hot-air flues* are to be formed where shown or directed; the depth of this vault below the surface of the ground-floor will also be no deeper than is required by these gentlemen; both the tower basements are to be fitted in the same manner.

The *beer-cellar* is to have footings the same as those for the heating vaults; the *side walls* are to be in 3 bricks and the end wall in 2 bricks; the *cross walls*, and that under the back of the arcade, are to have openings formed in them as shown, which are to have arches and inverts as described above. The opening for the stairs down is to have a *metal skewback* of ¾-inch metal with rib, as described above, and also with rod bolts, nuts, and plates fitted in the same manner; the side next the kitchen court-yard is to be fitted with a walled recess in 1½ brick, 3 feet 6 inches wide, having a slope of 9-inch brickwork for casks to slide down. The arched covering of the beer-cellar is to be of 1 brick in cement; the spandrils are to be filled in solid, as above mentioned.

The *wine-cellars* in the north front buildings are to be formed as shown, the several walls being carried down for that purpose, with the two double course of footings of the general walls; the depth between the surface of the two floors is to be 7 feet 9 inches; the inner enclosure and the binn divisions are to be in half brick in cement; 1 shelf of inch self-faced slate is to be placed in each side of the cellar, built into the half brick and pinned into the walls.

The *several walls*, where they abut upon those of the cellars and vaults, are to have open *buttresses*, which are to reach the level of the upper footings by a series of jumps, averaging 3 feet in width.

The *several openings* on the ground-floor, whether for gates, doors, windows, or open arches, are to be fitted with inverts in 3 rings of half brick, with proper skewbacks, &c., the beds being cut for and rendered in cement. The north-front centre building is to have front and back walls of 2 bricks, end walls of 1½ brick, the walls next the arcade and gateway are to be 1½ brick, the projection for the columns is to be brought out in 2½ bricks, the cross walls for the chimneys are to be in 1 brick, and the projection of the breasts in 1½ brick; the muniment-room walls are to be in 1 brick, and the other walls in half brick. All half-brick walls are to be in cement; above the level of the one-pair floor the back wall of the arcade is to be carried up in 1 brick.

Openings are to be formed under each of the windows in the exterior walls for *air bricks*, 14 inches × 6 inches. These are to be carried down the inside of the wall, and are to open under the floor for ventilation; these openings are to be repeated on the arcade wall in the same manner. The *front windows* are to have *recessed* breasts, those on the ground-floor are to be splayed; the other window openings are to be square; the door openings are to be formed as shown; those that are external towards the arcade, &c., are to be fitted on the corners with round-angled bricks, the arches over being fitted in the same manner. A recess of 1 brick deep is to be formed on the outside of the end walls next the study as shown, the arches over which are to be carried right through the wall, and the half brick in cement fitted in thereto.

The *oversail* for the chimney breasts on the upper floors is to be in 3 courses, and a course of 2½-inch rough York stone core 18 inches wide. The *chimney openings* are to be fitted with *bars* of 2½-inch × ½-inch iron, having 9-inch bearings and double corkings. In all cases the aperture of the flue is to be brought close down to the top of the chimney-bar, for which purpose a light cross-bar or a piece of self-faced York is to be applied to the cover of the spandril haunches of the fire-places. *Cement bond* is to be formed at the level of each floor; it is to be in 4 courses, and is to be kept back from the face-work, which is to be set in blue mortar as the others. Where cut oversail is described for projections as being in cement, the cement is to be as much on the wall as the projection is beyond the face. *Hoop-bond* of 1 inch × $\frac{1}{16}$-inch iron, tarred and sanded, lapt at the joints and angles; this is to be laid in the cement bond courses, in 3 courses, 2 lines in a course.

The *facing for the fronts* and general external face of the walls, also for the back of the arcades and the large gateway, is to be executed in the selected *dark-coloured bricks* already described. The face of the whole is to be brushed with water to remove all red brickdust previous to their being placed in the wall; the blue facing mortar is to be darkened with *Smith's* ashes, and not with lamp-black, and is to be well hand-worked. Great care is to be taken with the facing so as to secure the whole coming clean from the hands of the workmen. Where the facing comes against the stonework, unless the stone be back jointed, as in the case of the columns, they are to be close cut by mould to fit the line of the stone, and the joint is not to be large, but as small as may be possible.

The *alternate portions* of the *external quoins* are to be executed in rubbed, well-washed bricks, which are to course with the rest of the work, and are to project from the face 1½ inch; these quoins are to be 18 inches wide, and are to stand in the line of the face wall on either side so as to leave an internal angle of 1½ inch between the two. The *alternate portions* of the *window-dressings* are to be executed in washed red bricks; they are to be rubbed and gauged to a length and width; the beds are to course with the general front; the angles of the reveals are to be moulded with a large 1½-inch double-quirked bead; these dressings are to project ¼ inch from the general face of the wall; the aprons under the upper window sill are to be also executed in red rubbed bricks gauged. The *alternate portions* of the *piers* for the arches of the arcades are to be executed in red rubbed and gauged brick; the external angles being fitted with large 1½-inch double-quirked beads, the cross arches at the intersections of the arcades, and the entrances to the several staircases are to be fitted with alternate brick dressings to agree with the arcade arches; the piers in the gateway of entrance are to be fitted in the same manner. The *arches* over the doorways under the arcades are to be rubbed and gauged, the angles being in quadrant rounded brick, the intersections of which, with the uprights, are to be neatly cut and rubbed.

The back part of the fan over the opening next the arcade to entrance gateway is to be filled up with brickwork in cement. *Arches in cement* are to be turned over the openings in the end walls where the corridor and passage come. The *bed moulding of the cornice* is to be formed of brickwork in cement, the projections being cut to suit the mouldings.

The *chimneys* at the angles are to be carried up 1 foot 11 inches × 1 foot 6 inches, those in the centre of the building with the 6 flues are to be 5 feet × 2 feet 7½ inches; they are, where above the roof, to be constructed of the picked facing bricks and angles of rubbed red bricks, as the angles will cut out the bond. The whole are to be built in cement, every joint being fitted with a square lapt tie of hoop iron 1 inch × $\frac{1}{20}$ inch, with crossings to all the withes in the cluster flues; the face of these flues is to be pointed with blue mortar to suit the other work, either by being set in the carrying up of the flues or by raking and pointing after they are built.

The *rain down* pipes are to be half sunk into the facings wherever they occur. The *flashings* round the several chimneys, &c., are to be pointed in cement or blue-ash mortar.

The low side buildings between the centre and the 2 wings are to have 1½-inch brick walls to the north and the arcade back wall; the internal cross wall being like the other, half-brick walls in cement. The breast of the chimney is to be formed under the window as shown, the flue being carried over into the quoin of the dormitory, the horizontal flue, which is to be 9 inches × 14 inches, is to have a bottom and cover of 2½-inch self-faced York; the fire-place being covered with the same; 2 course of brickwork is to be brought up solid over this flue; the angles of this flue, and also of all the other flues throughout the buildings are to be rounded, the base of the flue where it joins the upright shaft, is to be fitted with a soot-door of an approved pattern. The two external walls are to be carried up above the gutters in a 9-inch parapet to receive the stone coping, the internal walls are to be 9 inches and 4½ inches as shown.

The *large school-room* is to have walls of 2 bricks, the arcade piers are also to be in 2 bricks, the whole having footings the same, in sets off and depths as already described; all the openings are to have inverts in 5 courses in the same manner. The *arcade in front of the school* is to have its several parts formed as already described, the parapet being carried up in 9 inches to receive the stone coping. The *frontispiece* is to have properly prepared foundations for the base pedestal of the columns, all the internal parts next the arcade, except the internal return of the frontispiece opening, are to be faced with picked bricks as before up to the ceiling line of this porch. The backs of the *circular niches* are also to be faced in the same picked bricks, those that fit against the stone architrave being close fitted. The face of the *die of the basement* of that side of the school next the hall quadrangle is to be in picked red bricks, the general surface is to be the same. The whole of the *interior* of these schools are to be worked fair-faced with a drawn joint for limewhite; this applies not only to the plain face, but also to all returns and arches. The *end walls* are to be pierced with the 3 openings shown on the sections; these are to have their angles formed with rounded cornered bricks, the arches and inverts as before, are to be in cement. The *lower members of the cornice* are to be formed of cut brick projecting courses in cement, the internal part of the top of the walls is to be filled up and made good to the woodwork of the roof in the same manner as all the other roofs. The *low end buildings* are to have walls in 1½ bricks, the one next the arcade is to be carried up to meet the roof, that next the quadrangle is to be fitted with a 9-inch parapet to receive the stone coping, the cross walls are to be in 1 brick thick. 2 lines of *hoop-iron bond* in cement courses as before, are to be placed in the school-room walls, one over each line of windows.

The *dining-hall* and dormitory walls to correspond with the foregoing.

The *upper parts of these several walls* are all to be carried up, and beam filled to the several roofs and floors throughout. The *interior face* of the several staircases, the studies, the kitchen offices, stores, &c., on the ground-floor, the Men and Maid-servants' bed-rooms on the mezzanine floor, and the dormitories over are all to be set fair with a neat struck joint, and prepared for lime whiting. The *north end walls* that form part of the studies in the head Master's and Secretary's apartments are to have recesses formed as shown, leaving the back 1 brick thick; these recesses are to be arched over, with 3 rings in cement. The *lobby openings* next the studies are also to be fitted with arches in three half-brick rings as above.

The *window backs* in the passage to the kitchens are to be solid, those of the dining-room are to be splayed and recessed to the floor.

The *study upper windows* are to have splayed sills, the bricks being worked fair and cut as required; the lower window backs are to be solid; the arches of all the windows and doors are to be worked fair; the Boys' library and play-room are to be fitted in the same manner.

The *centre pier of the great kitchen* is to be fitted with a projecting chimney breast as shown; this breast is to be brought up no higher than may be necessary, and is to be covered with 2½ inch self-faced York, the flue being carried back into the external wall, the brickwork of the whole being worked fair for limewhite. Flues are to be brought down in the 2 angles of the kitchen, 1 for the roasters, and 1 for the boilers; these flues are to be each equal to 9 inches × 9 inches, and are to be 2 to a side.

All the rooms and staircases, lobbies, &c., on this side, are to be worked fair and prepared for limewhite, as are all the several parts, both arches and splayed sills of kitchen and staircase upper windows. All the window backs are to be brought up solid.

The *fire-places in the Visitors' and Committee rooms* are to have projecting breasts in half brick, and the space between the fire-place and the external wall is to be thicknessed out to allow of the flue coming over into the external wall; this projection is to be corbelled over in 3 courses in the thickness of the floor; the flues are to be fitted where they join the upright with soot-doors as before.

The whole of the *cross walls that cross the arcade* in this floor are to have bearers of cast iron provided to carry them, which are to have covers of 2½-inch self-faced York, close jointed.

The centre hall of the towers is to be recessed for the several Boys' night water-closets, the thickness of the wall left being 9 inches. Piers are to be left at the intersections of the half-brick walls, 1½ brick wide, the recess over is to be arched from the line of the height of the division walls. The cross and division walls are to be half brick in cement. The cross wall is to be between floor and ceiling; it is to be worked fair face next the staircase; the cross divisions are to be 6 feet high, the front wall in which the doorframes are set, are to be worked fair face outside, a step being formed under the sill of 2 courses of bricks. The jambs of the windows N.C. are to be splayed as shown.

The chimneys over the Nurses' rooms are to be with breasts carried upon corbels as the last, and the flues are to be carried over and fitted in the same manner.

All the windows except those already described are to have solid breasts, splayed jambs are only to be applied where shown, and the square half-brick returns shown to several of the windows are to be done in cement; the windows of all the staircases are to be fitted with splayed sills in the same manner as those of the kitchen and studies.

The several chimneys shown on the elevations as standing at the angles of the towers, and on the several dormitory walls are to be formed as shown, and as required for the several flues, which are to be carried over into the same, as may be necessary; the construction of these flues is to be the same as that described for the flues over the north centre building; they are to have rubbed angles in washed bricks, are to be built in cement, and are to have hoop-iron bond as described for the others, the face is also to be pointed in blue mortar in the manner described.

3 tiers of hoop bond in cement—viz., 4 courses of brickwork in cement, and a 6-hoop bond therein are to be applied to the walls and cross wall of the east and west dormitory buildings and tower to the level of the cornice of these main walls, and 1 additional tier is to be applied to the upper part of the tower just over the line of the large windows, and also 1 under the sill line of the same.

The *several fire-places* throughout are to be fitted with proper chimney bars of 2½-inch × ½-inch iron, with 9-inch bearings for the small openings, and 14-inch ditto for the wide openings, and double corkings for all. *Stone corbelings* and carrying pieces in 2½-inch or 3-inch self-faced and tooled edge York, are to be applied to the carriage of the several flues as required, where they change from one wall into another, or where they are changed from one pier into another. The several flues are where required to be fitted with *soot-doors*, 14 inches × 9 inches, air-tight and double flush, and with turnbuckles. All the flues are to be well and smoothly lined with a properly prepared *parget*, the corners being all wiped out rounding to secure against the lodgment of soot. The whole of the flues are to be *carefully cored* at the completion of the job, and left clear. The several fire-places are to be fitted with *trimming arches* in half brick in cement; these are to be 18 inches longer than the opening, and are to be 18 inches wide, they are to have a proper cut skewback in the wall springing.

Each fire-place on the upper floors is to have an *air brick*, 9 inches × 3 inches, fitted to the external wall for a local supply of air to the same, which is to be carried across the fire-place in the spandril of the trimmer, and an opening formed from the same at the jambs of the chimney pieces. The stoves and ranges to the several fire-places are to be fitted and set with all necessary bricks, fire lumps and clay.

The deal floors on the ground-floor of the several parts of the buildings are to have *sleeper walls*, formed in half-brick with 1-brick footing; this footing is to stand on the concrete covering under the floor, these walls are not to be more than 5 feet apart; the *fire-places* of these floors to have *fender walls* fitted all round in the same manner. All these sleeper and fender walls are to be honeycombed so as to admit of a free passage of air, and the *division walls* between the several rooms that are fitted with deal floors are to be pierced with *honey combing* in the same manner.

The *side-wing screen walls* on the north side are to have footings of the same projection and heights as for the other walls, and they are to be at the same levels; the walls themselves are to be in 1½ brick, with return walls of the same to meet the side walls of the dormitory buildings; the angle of these walls next the north centre is to be fitted with the double piers shown, and the external angles at the line of the garden fence walls are to be fitted with single piers. The face of the walls is also to be fitted with single piers shown; the face of the large piers is to be 2½ bricks, the projection being 9 inches; the face of the small piers is to be

2 bricks, the projection being in half-brick, the general external facings of these walls is to be the same as that to the other buildings; the piers are to have alternate courses of rubbed red bricks between stone, the same as the quoins and other parts already described. The backing of the stonework of the centre gateways is to be in brickwork to suit the stone, and all the places where the brick face meets the stone it is to be close cut to the same.

The *chimney breast for the kitchen* is to be formed as shown with 2-brick projecting piers, the side recesses being arched over in cement; the flue from the chimney is to be carried over into the angle of the high building; it is to be fitted with a soot-door where it joins the upright. The *coppers* in the sculleries are to be set in brickwork in cement, with *fire-brick lumps* and clay; the upper edge is to be fitted with a hoop of iron 3 inches wide, which is to be well pinned into each wall. The *flues* from these coppers are to be carried over in the wall of the kitchen in the upper part of the wall, which is to be thickened for that purpose with projecting oversails. The bottom and covers of these flues are to be in 2½-inch self-faced York stone, with tooled edges, the flue itself is to open into the kitchen flue. The top of the end walls of the kitchen, &c., are to be topped with a parapet, and brick on edge in cement. The doorways and the hearth slab in kitchen are to be filled up and fitted with fender walls, as has been already described.

The *fence walls* that enclose the several gardens on the east and west sides are to have 2 course of footings with half-brick projection. The wall itself is to be 6 feet high, of which 5 feet is to be above ground; it is to be in 1 brick worked fair on both sides. These walls, where clear of the buildings, are to have 60 piers divided equally along their length. These piers are to be 18 inches wide and half brick in projection; they are to be tumbled in in cement towards the top, the top of the wall being finished continuously with brick on edge in cement.

The *Boys' privies* on the exterior of the towers are to have the fence walls in 1 brick, with 2 double course of footings averaging 2¼ bricks. These walls are to have 2 piers on each length 18 inches wide, the top being tumbled in towards the top in cement. The top is to be finished with ·brick on edge in cement. The *culvert* is to be formed of brickwork in cement; it is to have its bottom invert sloped to the centre with a sharp face, which is to be continued into the branch for the outlets. The whole is to be floted out with Roman cement finished net; the front wall is to be in 9 inches, the back 14 inches, with footings in 4 courses. All the inverts and angles are to be wiped smooth and round to allow of the free passage of water, &c. An *overflow* is to be formed at the outlet into the drain beneath.

The *chimney shaft* is to have 4 double courses of half-brick footings; it is to be 40 feet high, and is to be worked in 3 heights of 2 bricks, 1½ brick, and 1 brick thick, the whole being set circular and fair. The facing is to be of picked red brick, the same as that of the other buildings; the interior of the shaft is to be lined for a height of 6 feet, with fire bricks set in clay.

The *entrance gates to the kitchen court-yard* are to have piers and wings, with side entrances as shown, the footing being 4 feet 6 inches below the surface. This lower part of this wall is to be in 1½ brick, with a 2¼ brick average footings in 4 courses. The piers are to be 27 inches wide on the face, and are to project 1½ brick beyond the wall face. Above the ground the large piers are to be 2½ bricks square.

The whole of the foregoing attached offices to the Secretary's and Head Master's houses and to the kitchen court-yard, except the chimney, are to be *faced* with common bricks, the several arches being executed camber in the same, but without cutting. The whole of the interiors are to be prepared and worked fair for limewhite, and all the tops of the wall are to be close fitted to the timbers, &c.

Generally, all plates, sleepers, lintels, templates, &c., are to be bedded in mortar, and all window and door-frames are to be bedded in lime and hair, and neatly pointed in the same at one and the same time.

One tier of *cement bond*, with 6 lines of iron hoop therein, as already described, is to be carried round the low offices of the kitchen court-yard, &c. Three *tiers of cement* and hoop bond as above are to be carried round the chimney shaft. The whole of the above *cement work* is to be treated, as far as regards the *facings*, in the same manner as already described for the other parts.

Cesspools, Tanks, and Drains.—*Rain-water tanks* are to be formed in the rear of the kitchen of the Secretary's and Head Master's apartments, and also on the Under Master's garden side of the west tower, and in the kitchen court-yard, which is to receive the rain fall from the several roofs. The *tank* behind the Head Master's kitchen is to be formed with a bottom of 2 courses flat in cement; the sides are to be in 1 brick in cement, and the diameter 5 feet 6 inches; the height is to be 5 feet 6 inches, and it is to be arched over in a semicircular dome, having a main hole on the top 2 feet in diameter, fitted with a 1-brick ring; the inside bottom and face are to be rendered in neat cement ¾ inch thick, the eye is to be filled with a self-faced York 3-inch cover, tooled on edge, and the top covered at the ground line with a tooled 3-inch York cover, 3 feet 4 inches square, having a tooled edge, and with 2 eyes let in and leaded. The *rain water* from low buildings at the east end of the north-front building is to be conveyed in *6-inch glazed earthenware pipes*, equal in quality to Doulton's, to the tank, and inserted into the same, the pipes projecting 6 inches internally, clear of the sides. These drain pipes are to be fitted with all necessary *bends* and *junctions*, are to be set in cement, and are to have a regular fall of 1 inch in 10 feet from the iron pipe to the cesspool. The bends where they pass through the wall from the vertical pipes are to be set fast in the same, but all the horizontal passings of pipes through the walls must be done in rings, so that the pressure of the wall shall not by unequal settling break the pipes or the joints. An *overflow* from the *tank* is to be formed with 2 courses in cement for a bottom, and half brick in cement for sides, which are to be 2 feet 3 inches deep; a dip-stone of 2½ self-faced York with tooled edge is to be fitted to the same. The cover is to be of self-faced 3-inch York, 2 feet 8 inches square, with tooled edges. The *overflow* pipe from the *tank* to the trap, and from the trap to the foul-water drain is to be 4-inch glazed earthenware, set in cement, and fitted with the necessary bends and junctions. The tank, rain-water drains and overflow, with its trap for the Secretary's side, is to be the same as that for the Head Master's, as described above.

The tanks in the Under Master's garden and kitchen garden are to be constructed in like manner.

The several *down iron pipes* are to dip into the orifice of a 6-inch glazed bend, which is to be recessed into the brickwork to receive it, the joint being stopped with cement. In all cases this junction is to be under the surface.

The *foul-water drains* from the south end of the western dormitories are to be carried in the manner shown; that from the infirmary kitchen-sink in a 4-inch pipe, and that from the water-closets in 6-inch glazed pipes; the several down pipes are to dip into properly placed bends, fitted with all necessary bends and junctions, and set in cement, as already described. The *gratings in the quadrangles* are to be fitted with cesspools—those nearest the outfall drain are to be fitted with *traps;* the bottoms are to be in 2 courses, the sides in half-brick, and 2 feet 6 inches deep; the dip-stone is to be in 2½-inch self-faced stone, with tooled edges; and the trap is to be fitted with a 3-inch stone cover; the whole of the joints are to be well flushed up, and the inlet and overflow pipes neatly pointed round. The *hall quadrangle* is to be fitted with an overflow and waste-pipe from the conduit that will stand in the centre. The *drain from the conduit*—that between the 2 cesspools to the surface-gratings, and that from the infirmary sink—are to be in 4-inch pipes; all the others are to be in 6-inch pipes, until the junction of the one from the Under Master's water-closet, when they are to be 9-inch to the point of junction with the culvert of the privies. The *drain from the night water-closets* is to be carried round into the end of the culvert, as shown, and is to be in 6-inch pipes, as before described. The *drain from the culvert* is to be in 18-inch glazed pipe, the first bed being brought up to receive the waste from under the plug in the branch of the culvert; the *overflow from the culvert* is also to have an inlet by a junction-piece into the 18-inch pipe; this 18-inch drain is to be carried a distance of 90 feet from the back of the culvert, and at that distance there is to be a *cesspool* formed, 9 feet 6 inches in diameter and 14 feet 6 inches to the eye in the dome; the bottom is to be in 2 courses: the sides and arch in 1 brick; an eye is to be brought up for 2 feet over the top of the arch, which is to be covered with a 3-inch self-faced cover, 2 feet 9 inches square; all the brickwork is to be in cement, and the interior is to be lined with a rendering of ¾-inch neat cement; an overflow of 10 feet, of 6-inch drain pipes, is to be inserted into the upper part of the cesspool, which is to debouche into an open ditch. The 18-inch, and other pipes mentioned above, are to have falls, and are to be set as before.

The drains and cesspools of all the other parts to be as just described.

Hot and cold-air flues, &c., connected with the *system of ventilation* as prepared by the *Messrs. Haden*, who are to have the superintendence of the formation of all these flues, and give directions for the same. The Contractor is to provide for the setting of the *two apparatus* provided by the Messrs. Haden, the sum of 16*l.*, which is to cover all labour, lumps, bricks, fire-bricks, clay, cement and mortar that may be necessary for fixing the whole complete. The *cold-air inlets*, in the angles of the towers, are to be formed by adding half-brick in mortar to the tower wall for one side, and forming the other side and end with side end having one footing of 1½ brick, and a 1-brick wall to the surface, to receive the coping and grating; the bottom is to be laid with brick on edge, grouted, and the inside is to be rendered with ¾-inch cement. The *cross drains* to the apparatus are to be formed; a wall having 6-inch 1½-brick footings, and a 1-brick wall in mortar;

the arch over is to be in mortar, and is to be fitted with proper skewbacks; the junction with the upright inlet is to be made by a quadrant-curved flue, as above, and with arch in the same manner; the bottom is to be paved with brick on edge, grouted, and the inside is to be rendered in cement ¾ inch thick; the openings through the tower walls are to be made from these cold-air flues in the manner, and of the size and at the levels, required by Messrs. Haden. The *cold-air flues* to the studies are to be formed as shown, with half-brick walls in cement, with 1-brick footing; the top being prepared to receive the kerb, and the depth being 3 feet. The *cross flues* within the walls are to have sides of half-brick in cement, with 1-brick footings, the whole being 2 feet 9 inches high; the bottom is to be paved with brick, flat grouted; the inside of these flues is to be rendered in cement; the width of these flues is to be 2 feet 3 inches, and the cover is to be in 3-inch self-faced York, with tooled joints set in cement. The *cold-air flues* to the dining-hall, and the flues under the scullery to Master's room, are to be 1 foot 6 inches × 1 foot 6 inches; the sides are to be half-brick in cement, with 1-brick footings, paved with brick on edge, grouted, rendered inside, and covered with 3-inch self-faced York, with tooled joints set in cement. The *inlets for the several cold-air drains* are to be formed in the several walls as required; those that are in the upright face of the wall are to be brought down in the thickness of the wall with equal area to the flue, and all the several gratings are to be set, and secured in the walls.

The *warm-air flues* in the studies are to be formed 2 feet 3 inches square; the sides, footings, rendering, and cover, being the same as before described, the bottom being in brick flat grouted. The return flues at the end of the studies are to be 18 inches square; those at the middle walls of these rooms are to be 15 inches × 18 inches, the whole being formed in the same manner as described for the last. The flues next the wall of arcades are only to have one side, as shown, the cover on the wall side being carried on the set-off for the wall footings, the other parts being executed as before. The inlets to the arcade wall are to be formed as shown, care being taken that the inclination is upwardly and free; the several outlets to the floor surfaces of the studies from the hot-air flues, are to be brought up in half-brick in cement, to receive the kerbs of the iron gratings. The *warm-air flues* in the school-room are to have entrances 2 feet square, and branch flues 18 inches square; they are to be formed and fitted in the same manner as those for the studies, with eyes brought up for the outlet gratings. The *warm-air flues* that are to convey the air to the upright trunks leading to the upper dormitories, are to be formed 2 feet square, in the same manner as before. The *flue towards the south end* is to be 2 feet square, and is to be formed and fitted in the same manner as the others; the branches are to be 18 inches square, and in the same manner; the inlets to the wall flues are to be carefully formed, as already mentioned. The *flue in the hall* is to be formed 1 foot 3 inches wide and 2 feet deep, the sides and bottom being formed as before; the top being prepared to receive the continuous kerb for the grating.

Provide for the preparing for and setting No. 16 valves in *cold-air flues*, and also No. 19 valves in *warm-air flues*, with all stones for centres, &c., and also all bearings, makings up, and cementings, as required. The *air flues* in the thickness of the arcade, and the other walls leading to the lower floor of dormitories, are to have the area required by the Messrs. Haden; they are to have proper outlets and inlets carefully formed, and are to be lined throughout with parget smoothly laid. The *large flues* in the tower walls leading to the upper dormitories are to be formed as shown, the width between them being always maintained at 9 inches wide; the inlet and outlet from these flues are to be of the area and form required, the whole being pargeted smoothly throughout. The *ventilation flues* from the studies and the kitchen are to have their entrances at 6 inches from the ceiling, these are to be inclined upwards; these flues are to be 14 inches × 4½ inches, and are to be pargeted internally; the outlet is to be through the top of the wall between the timbers of the kerb. The *foul-air flues* from the dormitories are to be carried up in the angles of the tower, as shown; the flue from the lower dormitory is to have the base of the angle flue carried on a 4-inch York tooled landing, which is to be fitted with brick sets-off underneath; the face of this angle flue is to be formed of half-brick in cement. Each flue is to be fitted with an opening to give access to the exhaust fire that is to be placed therein. A pair of flues, of 14 inches × 14 inches, are to be carried up in the angles, having inlets from the triangle flue; these inlets are to have the inclination upwards already alluded to in these flues. The outlet from these two flues in the wall is to be at or below the line of the cornice frieze by a grating, that from the triangle flue to be by the top of the angle shafts of the tower. All these flues are to be well pargeted. The *flues from the upper dormitory* are to have the base of the triangular one resting on the iron girder's lower flange, and built into the wall; and the other angle flues are to be begun close over the girders. These flues are to be constructed in the same manner as those described above. The inlets to these several flues are to be formed as may be directed, and are in all cases to have an upward inclination. They are to be well pargeted throughout.

All *these several flues*, whether for hot air, cold air, or for outlet, *are to be cored* at the completion of the works, and cleanly swept out, care being taken that they are made perfectly air tight in their several parts.

The *bricklayer is generally to attend upon all the other tradesmen*; he is to cut away for and make good after all other workmen of whatsoever kind. He is to bed all plates and frames for the Carpenter and Joiner, he is to bed all templates for girders, bearers, &c.; he is to *bore all holes* for Plumbers, Engineers, Bellhangers, &c. He is to point round all the Plumbers' work where it joins the brickwork. He is to *set all stoves*, ranges, coppers, and make good after the Smith; he is to see that all the drains and pipes are clear, and that all rubbish is removed at completion of the works. All the *brickwork* is to be generally *overlooked at completion*; all loose and spring joints are to be *made good*, *all defective bricks* cut out and replaced, and all brick dust brushed from the facework; and any defective portions of the rubbed or moulded work is to be made perfect in every part.

MASON.

Materials.—The general stone used for the dressings is to be *Bath stone* from the quarries at Box; an approved quarry to be selected from by the Architect; the stone is to be of the best quality, free from all defects, as water veins and large crystals, and is in all cases to be set in the buildings as it stands in the quarry. The several stones are to have a perfect bed, and to be of fair scantling for the purpose it is intended to be applied to. The *York stone* is to be hard, and from an approved quarry of close bed, and free from loam layers or other defects. The *Portland* used is to be from the best bed, and to lay on the natural bed.

The *workmanship* is to be the best of its several kinds, all the moulded parts being carefully and perfectly executed and free from cripples; the beds and joints are to be square and free from all liability to spurting of the face; the joggles are to be of equal depth the full way through, and all dowels are to be fairly set in both stones; both joggles and dowels, whether run with cement or with lead, are to be fully run and well filled in every part. The carving is to be done with spirit and feeling, the clay models of every part being severally approved of by the Architect previous to being executed on the stone. All the work is to be covered up at the angles and oversails during the progress, and the whole is to be carefully cleaned down at completion, great care being taken not to injure the brickwork or its colour by drags or dust.

Principal entrance north front is to have its *subplinth* cased with stone 9 inches thick, 15 inches deep, and of the extreme length of 8 feet 6 inches; the upright joints are to have joggled joints, 1½ inch square, filled with pebbles, and run with cement; each plinth is to have 3 cramps of ¼ inch iron galvanized wire, 6 inches long, let into the stone and brickwork, and run with cement. The *plinth moulding and base* is to be in stone, 8 inches thick, put together and fitted as above, the square edges being weathered, and the mouldings mitred. The *dies to the pedestals* are to be in 1 stone each, the lower fillet with its hollow over is to be sunk out of the face, the face is to be paneled with sunk moulding as shown, and the back is to be back jointed to the plinth &c.; the return faces are to be paneled in the same manner as the face. The *cap of the die* is to be formed of stone, 12 inches thick; it is to be moulded and mitred, and the back is to be jointed to the face of the other work; it is to be fitted with jogs and pebbles as before, and is also to be cramped in a like manner; the wide top is to be sunk and weathered, the angles being mitred. The *base of the column* is to be in 1 stone, 2 feet 6 inches, the out and in way; it is to be circular moulded, and the square die is to have its top weathered and mitred; the side next the wall is to be back jointed to the other work. The *shaft* is to be got out of 4 stones, the lower is to be 23 inches on the in and out bed, the second 22 inches, the third 21 inches, and the top 20 inches; the face is to be circular moulded and diminished, the squares of the upper and lower centres are to be worked on the solid, the shaft being sunk away from the same; the back of the shaft is to be jointed to the face of the other work; 2 dowels of inch square slate, 3 inches long, is to be let into the 5 bed joints of the column. The *cap* is to be in 1 stone, and is to be 28 inches the in and out way; they are to be angular Ionic with sways and droops of flowers from the volutes; the whole is to be modelled in clay, and approved of by the Architect before it is cut in the stone, and the execution is also to be entirely approved of before it can be passed. The back of the cap is to be jointed to the other work; the cap is to be cramped into the wall with No. 2 cramps as before, 20 inches long. The 6 *columns* to the north side of the entrance gateway, the south side of the entrance gateway, and the centre of the south side of the hall, are to be alike in every respect, except that the capitals and top stone of the 2 last are to show 3 angular volutes, &c., clear of the rest of the work.

The *subplinth of the impost* is to be in 1 stone, and is to return round and include the rebate for the gates; it is to be cramped and joggled to the subplinth of the column. The plinth and its moulding is to be in 1 stone and is to be treated like the above, and is to be also cramped and joggled to the column plinth. The *shaft of the impost* is to be in 3 stones; they are to go the whole width of the pier including the rebate for the gate; the square fillets of the upper and lower centres are to be sunk out of the solid, each stone is to have a cramp as before to the column stones; the joints between these stones are to be joggled as before. The cap of the impost is to be in 1 stone, and is to be moulded and mitred, the flat top is to be weathered, and the stone notched to receive the cross transom of the gates, which is to be fitted to the cap moulding; the large OG moulding of the cap is to be carved on the face with a water leaf, which is to be mitred at the angles.

The *architrave* is to be got out of 3 stones of a side of the spandril, which are to be properly jointed to the radius lines; the lower stone is to be carried in behind the column; being fitted with the lower part. These joints are to have double plugs and lead to each, these plugs are to be not less than $\frac{3}{4}$ inch square, and each 1 inch deep, they are to be at least one third down the stone. The *key* is to be in 1 stone, 2 feet × 1 foot 8 inches × 2 feet 3 inches; it is to be properly worked and fitted, the face and cap are to be moulded, and the face and profiles carved, a clay model being prepared for the same. N.B.—The imposts, the architrave, and key, are to be alike in all 3 frontispieces, except so far as their application differs thus, that next the school quadrangle is not to have its impost notched, while that on the south façade is to have the whole back jointed to the facework. The *spandril* is to be formed of 3 stones, which are to be jointed to the architrave, close jointed to the cap and shaft of the column, and fitted with radiating and level bed joints; the top and bottom stones are to be 9 inches thick, the centre 12 inches, the top stone is to be cramped to the key with one cramp as before. These spandrils are to be fitted with a moulded panel with equal margins all round; those for the north and south façades are to be full carved with a military trophy, &c., a clay model of which is to be first submitted. The *architrave and frieze* is to be in 5 stones and are to be joggled together; the width of the bed is to be 28 inches, the joggles are to be fitted with concealed bearings, the soffit is to be forked plain, the face is to be sunk and moulded; the frieze is to be swelled, and the ends and returns carved in leaves; the centre is to be fitted with a square panel, having an inscription in Roman capitals. The ends are to be back jointed to the general face. All 3 frontispieces are to be fitted alike.

The *cornice* springer is to be in a stone 3 feet 9 inches × 3 feet 3 inches and 2 feet 9 inches. It is to have upright and raking joints to suit, and is to have a square stooling for the wood cornice to abut against; the top of the raking joint is to be fitted with a water joint, a groove is to be cut on the top surface for the lead covering being burnt into, the face and the return is to be moulded and sunk with the proper mouldings, the horizontal cornice being fitted with sink and moulded modillions, the same part of the raking cornice is to have a large moulding, which is to be carved in two members. The bed mould of lower cornice is also to be carved in an egg and tongue; the raking cornice is to have a double head plug, &c. fitted; the joint on the top weathering of the lower cornice is to be fitted with a water joint. The *lower cornice* is to be completed within the springers with 4 stones, the bed is to be 22 inches wide, the joints are to be joggled as before, and the stones are to be cramped together. The face is moulded and fitted with sunk modillions and carved bed mould as the foregoing; the top is to be sunk and weathered, and the joints fitted with water joints. The *raking cornice* is to be finished in 2 stones of a side and a saddle, the bed being 3 feet 3 inches wide; the top joints are to be fitted with waterings, and are to be fitted with double lead plugs. The back edge is to be grooved for the lead cover, the face is to be moulded and carved as described for the springer, *spandril* piece in tympanum is to be 9 inches on the bed, the joints are to be joggled and pebbled as already described, and the stone is to be cramped with 2 cramps. The centre stone is to be 6 feet × 4 feet 6 inches × 2 feet 9 inches; it is to be jointed to suit the position, and the joints are to be joggled as before. Two of these stones are to be carved with the *ducal arms of Wellington,* with crest and supporters complete, the whole having 15-inch projection. The *internal frontispiece* is to be fitted with a carved scroll-headed shield, having swaggs and droops of fruit and flowers to fill up the same surface as the foregoing. These carvings are to be submitted in clay model before they are cut on the stone, and the workmanship is to be specially approved by the Architect.

The wings of the south or garden front are to be fitted on the line of the cornice with two *double scroll trusses,* which are to be got out of 2 stones 4 feet × 2 feet 3 inches × 9 inches. They are to be sunk, jointed into the shaft capital and architrave of the column; they are to be moulded and carved on the 2 faces and profile, clay models of the whole being submitted and approved of.

The *subplinth of the school frontispiece* is to be got out in stone of 6-inch bed, the joints of which are to be joggled and cramped as before. The plinth is to be in stone of 5-inch bed, and is to be moulded and mitred as shown, the joints being joggled and cramped as before. These are to be back jointed to meet the general face work. The *die of the pedestal* is to be in 1 stone, 2 feet 1 inch on the bed. The fillet of the bottom centre is to be worked on the solid, the faces being sunk for it. The back is to be sunk jointed to the general front. The *cap of the pedestal* is to be in 1 stone, and is to be moulded as shown; the top is to be weathered and the back sunk jointed. The base and plinth of the shaft are to be in 1 stone, which is to be moulded, weathered, and back jointed as required. The shafts of the columns are to be in 3 stones, the average bed being 20 inches; they are to be moulded and diminished as before; the joints are to have slate dowels, 2 to each, and the back is to be jointed to the general face. They are further to be secured by cramps 20 inches long. The cap is to be in 1 stone, and is to be plain moulded of the Tuscan Order. The top of the abacus is to be weathered, the back is to be sunk jointed. The impost, surbase, and the plinth and base moulding are to be in 2 stones; they are to be moulded, mitred, and weathered, as shown; they are to return round to meet the brick pier of the cross arch in the arcade, and are to be joggled with pebbles to the stones of the pedestal, and cramped together. The shaft is to be in 3 stones, the fillet of the cinctures being sunk out of the solid. The beds are to be dowelled together, and the upright joints are to be joggled to the column stones and cramped. The cap is to be moulded and weathered as shown, and is to be cramped to the other work, the mouldings being back jointed to the face behind. The architrave is to be got out in 3 stones on a side, which are to be worked with a plain soffit, and moulded inside and out; the upper side is to be fitted with double plugs and lead as before to every joint. The key is to be in 1 stone, and is to be wrought and moulded as shown on the face, and mitred cap. The face and 2 profiles are to be carved. The spandrils are to be in 3 stones, the bed being 4½ inches; the joints are to radiate from the architrave joints, they are to be worked and jointed to meet the other work. The top joints are to be fitted with double plugs and lead. The *architrave and frieze* are to be in 4 stones, the bed being 1 foot 7½ inches; the joints are to be fitted with concealed bearing joggles, and their top is to be double plugged; the soffit is to be worked in plain face, the architrave is to be moulded as shown, and the frieze is to be inscribed with an inscription in Roman letters 8 inches high. The *springer to the cornice* is to be in 1 stone, 3 feet 6 inches × 2 feet 9¼ inches × 2 feet 5 inches. The horizontal and raking joints are to be sunk and prepared as necessary; the face is to be sunk and moulded, as shown, and the return is to be prepared to form the cap of the wing truss. The horizontal cornice is to be made in 3 stones, the bed being 2 feet 1 inch; it is to be moulded to suit, the weathered top is to be fitted with water joints. The raking cornice is to be formed of 2 stones on each side of the saddle, each 2 feet 9¼ inches on the bed; the whole is to be moulded to suit. The top joints are to be fitted with water joints, and double plugs and lead; the back is to have a groove for the lead covering. The tympanum is to be in 5 stones, the 4 side ones having 4½ inches bed, the centre having 1 foot 7 inches bed. The joints are to be double plugged on the upper edge with lead. The centre stone is to be carved with a scroll-headed shield and swags of fruit and flowers, of which a model in clay is to be submitted and approved previous to its being carved. The *return over the arcade* is to be fitted with an ashlar facing of 4½ inches bed from under the line of the slate and lead covering to the cornice, the side next the wall is to be back jointed to the facings; 12 cramps are to be used of a side to cramp these facings to the filling up brickwork; the part over the side truss is to be projected and carried up to the cornice in a break. The moulding of the architrave is to be carried home to the wall. The *cornices* over these returns are to be in 2 stones each, having a bed of 2 feet 4 inches; they are to be moulded and jointed, the top joints being double plugged and the end joint backed to the wall, as far as the moulding is concerned; the part over the truss is to be broken forward and mitred as shown. The wing trusses are to be in stones 9 inches thick as shown. They are to be let into the top of the coping and the face of the ashlaring; they are to be moulded as shown, and are to have their faces and profile carved with scroll heads and fruit droops. A clay model is to be submitted.

N.B. The rest of the external stonework was described with the like minuteness of detail and similar construction.

The *large windows* at the end of the dormitory corridors are to have the plinth and base moulding in 1 stone, which is to be sunk and moulded as shown; the different upright joints are to be joggled and cramped. The dies are to be in 1 stone, the fillet being worked out of the solid. The cap of the pedestal and the base of the shaft are to be got out of 1 stone, and are to be moulded, mitred, and weathered as necessary; the upright joints are to be pebbled, joggled, and cramped; the whole is to be back-jointed to the general surface. The side plinths, trusses, and cap in the line of the pedestal are to be in 1 stone of 9½ inches bed; they are to be moulded, mitred, carved, and back jointed as shown.

The *cantilevers to the balconies* are each to be in one stone 4 feet × 1 foot 6 inches × 10 inches, the projecting part is to be moulded and fitted with a moulded capping, the face and profile are to be carved with scrolls and leaves. The centre mask is to have a stone 1 foot 6 inches × 1 foot × 1 foot 3 inches, and the 2 side swags are to have stones 1 foot × 1 foot × 1 foot 9 inches; the 2 at the end of the balcony are to have stones 1 foot 3 inches × 1 foot 3 inches × 1 foot; the whole are to be cramped back into the wall, and are to be carved with flowers and fruit. Models in clay of the whole are to be prepared and approved of. The several parts of these carvings where cut clear of face are to have the stone recessed, so as to have the facing of brick placed in front close up to the carving.

The niche sill is to be in 1 stone, 5 feet × 2 feet 3 inches × 9 inches; it is to be moulded, sunk, and notched as shown, and the centre fitted with a carved shell; the top is to be sunk and weathered. The side pilasters and architraves are to be each in 2 stones, 10 × 10 on bed; their end joints are to be fitted with slate dowels; they are to be moulded as shown, and are each to be fitted with a droop of flowers, 2 feet 3 inches long and 3 inches wide. The body of the niche is to be formed of 2 courses of 3 stones and 3 courses of 2 stones, the whole being jointed to suit, and they are to be moulded on the face to the circle; the top parts of the several joints are to be fitted with double lead plugs. The head of the niche is to be in 1 stone, 3 feet 6 inches × 1 foot 11 inches × 1 foot 9 inches. It is to be jointed to the springing line, and coved in a quarter of a sphere, which is to be fitted with a carved shell upon the top course, under which is to be carried a circular carved architrave.

The whole of the several parts are to be back jointed to the general face of the works, and the upper joints double plugged with lead and fitted with water-joints.

The oval window in the centre of the south front is to have its scroll wings got out of 2 stones, 2 feet 6 inches × 3 feet 3 inches

× 9 inches. The bottom bed is to be fitted with 2 dowels to the label of door, and the top is to be double plugged to the oval.

The *large windows of the several fronts* are to be fitted with alternate rustics of stone, as shown.

The *piers* on each side of the *entrance gateway* are to be fitted with Portland plinth and alternate stones, the same in workmanship as the above. The projection of the pier is to be 9 inches.

The *vases* for the great piers are to be got out of stone 2 feet × 2 feet × 4 feet 6 inches. They are to be moulded and carved, and are to have 2 plugs or slate dowels to each. A model of this vase is to be submitted in clay and approved of.

The angles of the several quoins of all the buildings where the rustics pass each other are to be fitted with carved droops of flowers for the depth of the first stone of the rustic.

The *string* at the level of the first floor of the north and south fronts is to be got out in stones of 12 inches × 11 inches bed; it is to be wrought and moulded, and sunk to receive the *cast cement guilloche*, which is to be laid in and secured to the same. At the portion where this string forms the coping of the low building it is to be made wide enough to weather the top of the wall. These joints are to be water jointed, and the inside throated. All the joints of the several stones are to be double plugged with lead. The guilloche is to be in Atkinson's cement, and is to be painted 4 times in oil to match the stone. A model in clay is to be submitted and approved of. The copings of the low buildings are to be fitted with scroll ornaments out of 39 inches × 18 inches × 6 inches stone; it is to be pierced and carved on the face; it is to be secured to the coping with three dowels to each stone.

The *balconies* at the *large windows of dormitory* corridor is to be got of 9-inch Portland in 1 stone, 9 feet × 5 feet. They are to be carefully selected and free from flaws; the top is to be sunk and weathered, the soffit is to be plain, the edge is to be circular on plan and moulded to match the string at the same line, the bed-moulding is to be carved with a bold leaf, to be approved of; the wall end of these landings is to be securely pinned in, and in such a manner that there is no chance of breakage.

The *upper string of the towers* is to be in stone, 12 inches × 11 inches; it is to be moulded and recessed like the string at the line of one-pair north front, and the cement guilloche is to be of the same kind.

The *top necking* of the *several chimney shafts* is to be got out of stone 5 inches thick; the openings for the several flues are to be perforated through the same; the several stones are to be cramped together, the face is to be moulded, sunk, and mitred as required for the several shafts; the frieze is to be cast in Atkinson's cement, the model of the swag being first submitted in the clay and approved of; the bed-moulding of the cap is also to be run in cement, and mitred round the several flues; the cap moulding of the several flues is to be executed in stone, 15 inches thick, the several stones going right across the chimneys; they are to be moulded and mitred as shown, and are to be perforated with the several flue openings, which are to be fitted with 9-inch terro-metallic pipes, 12 inches long, which are to stand 6 inches above the line of the stone, into which it is to be cemented; the stones are to be double plugged with lead on each of the edges.

The *tablets* on the end of the dormitory buildings north and south fronts, are to be formed of *pure black marble*, polished on the face, and with fair edges; they are to be secured with 2 dowels and 2 cramps each, and are to have incised inscriptions in Roman letters, gilt, cut on their face.

N.B.—The whole of the foregoing are, unless they be otherwise described, to be formed of *Box stone;* and although only one of the parts may be described, yet it must be understood that all parts of the same kind are meant and alluded to; this also applies to the cases where more than one is described—in short, the drawings and specification must be considered as explanatory of each other.

Steps.—The *entrance gateway* is to be fitted with a York *step*—on the sides they are to be of hard stone, 12 inches × 7 inches, each in 2 stones; the heading joint is to be rubbed and is to be double plugged with lead. A *step* of the same kind is to be fitted to the opening on the south front; *steps* in 1 stone are also to be fitted to the openings from the arcades in the south front. The several doorways on the east and west fronts are to be fitted with *steps* of the same kind, in which mortices are to be cut for the doorframe heels. The opening to the school frontispiece is to be fitted with a step in one length; the several openings of the arcades are to be fitted with steps, as above. The door and opening steps are to be tooled with square edge; they are to be back jointed to the paving, and jointed to the ends; each of the ends is to be double plugged to the stones of the piers.

The *staircases from the arcades* to the Committee and Visitors' rooms—also those to the Servants' apartments, east and west mezzanine—are to be of tooled hard York, 10½ inches × 8½ inches, with sloping soffit, bird's mouthed, rebated and back jointed. The ends of the steps are to project 2 inches beyond the centre line of the well; the bottom steps are to be fitted with rounded ends.

All the ends are to be tooled fair, and holes cut for the balusters, which are to be leaded; the ends are to be cut for and pinned in with cement, the riser of the top step is to be made up with a slip of York bird's mouthed to the tread below and sunk jointed to the landing over.

The *Committee-room and Visitors'-room* staircases are to have 2 *iron girders* across for bearing the landing; the other staircases are to have only 1 iron girder, the other joint being over the wall with the folding-doors; the width of the staircases is to be made up in 2 stones, the long and short ones alternating.

The *staircases in the tower* are to be formed with steps of 10½ inches × 8½ inches in hard York stone, tooled all round, and sloped soffits as above. The several steps are to be 2 inches longer than the opening centre line, and are to be bird's mouthed, jointed, and pinned in as above. The lower steps are to have rounded ends. the newels are to be let in and leaded; the nosing edge of the steps is to be notched for the lower rail of the railing, and both these and the soffits are to have holes cut in the stone and leaded for the short stubb bolts that secure the iron railings. The top riser is to be made up in the manner described above.

The several *landings* are to be formed of 5-inch York tooled both sides, the edges tooled fair where seen; the joints over iron girders or walls are to be close tooled, jointed, and cement joggled.

The joints that are not over any bearings are to be joggled and leaded. The half-space landings are to be in 2 stones, and are to have an iron girder next the well-hole. The mezzanine landings are to have 4 girders and 1 bearing on the wall of arcade. The one-pair landings are to have 6 girders, the two-pair landings are to have 4 girders and 1 bearing on the wall of closets; all the wall-ends are to be securely pinned in.

The *stairs up* from the attic dormitory to the tower are to be formed of steps as before, they are to be 3 feet 6 inches long; they are to be fitted with 2 winders, one 3 feet 2 inches at the greatest width, and one 2 feet at the greatest width; where these steps cross the window, they are to be fitted with a hollow cast-iron string, into which they are to be fitted and leaded. The landings from the attic landing to the above steps are to be in stones 3 feet 6 inches long, and they are to be tooled both sides, and the seen edge holes and notches for the railing are to be provided as before described.

The *cesspools in the quadrangles* are to have covers of 4-inch rubbed York 30 inches × 24 inches; they are to have tooled edges, under-cut to key the asphalte, they are to be perforated for the gratings and rebated to receive the same.

Fireplaces.—The kitchens of the Head Master's and Steward's house are to be fitted with a 2½-inch rubbed *York hearth* slab and inside hearth, notched to the jambs, &c.; they are to be sunk and rebated, and fitted with an ashpit and cover grating. Plain chimney-pieces are to be fitted to these rooms of 2-inch rubbed Portland; jambs and shelf 9 inches, *mantel* 12 inches; the edges chamfered, the cornice rounded. The sculleries adjoining are to be fitted with a 3 feet × 2 feet 2 inches *rubbed sink*, 7 inches deep, which is to be fitted with a sunk rebated pipe-hole, cut and pinned to the wall, and to have 2 bearers 2½-inch York, tooled both sides, size 27 inches × 26 inches, bedded on a dwarf wall, and cut and pinned to the wall. The other rooms on the ground-floor are to have rubbed York *inside hearths;* the drawing-room and the board-rooms are to have *slabs of* 1¼-inch *polished veined marble*, notched; the other rooms are to have 1½-inch rubbed Portland slabs, also notched. No. 2 *veined marble chimney-pieces*, of the prime-cost of 80*s.*, exclusive of fixing, is to be fixed as above. The other rooms are to have *boxed Portland chimneys* with moulded caps and bases, and in-and-out slips with bed mould to shelf and rounded corners. The fireplaces on the first-floor of this north front building is to have inside hearth slabs, of 2-inch rubbed York, and also 1½-inch Portland rubbed slabs, all notched to the jambs. Four of the bed-rooms at this end are to be fitted with *boxed Portland chimney-pieces* as above, and all the others are to be plain chimneys of Portland stone. The attics are to have 2-inch York inside hearths, 1½-inch Portland slabs with notchings. The ground-floor rooms of the Under-Masters' and the Servants'-offices are to have rubbed inside hearths of 2-inch York, and slabs of 1½-inch Portland for the Under-Masters' and of 2½-inch rubbed York for the other rooms; the Master's-rooms are to have boxed Portland chimneys, the other rooms plain chimneys, all as before. The fireplaces on the mezzanine are to have 2-inch rubbed inside hearths, and 1½-inch Portland slabs; the chimneys of the Master's sitting-rooms and Matron's-rooms are to be boxed Portland, all the others are to be plain as before. The whole of the foregoing chimney-pieces are to be set in plaster, and are to be securely cramped to the wall; the slabs are to be neatly fitted, notched, and bedded in mortar.

The several fireplaces are, as has been already described, to be provided by means of an *air-grating* with a *local supply of air;* this is to be carried across the fireplace under the hearth-slabs to each of the jambs, where outlets are in the setting of the stove, to be formed inside each jamb, and an *outlet* of 6 inches long × $\frac{1}{8}$ inch wide, formed on each side at the level of the fire-basket of the stove.

The windows of the kitchen and scullery to the north front offices are to be fitted with quarry-worked tooled York sills, 8½ inches × 4 inches, sunk and throated; the ends are to be fair worked, and are to be pinned in with cement. The door sills to the internal doors of these rooms are to be in 4-inch tooled York, the full thickness of the several walls in width, with jointed edges. The external doors are to have York steps, 12 inches × 7 inches, tooled, morticed, and set as has been already described.

The several *hot and cold-air flues*, where they pass through any of the main walls, are to have covers of 3-inch tooled York stone, the full thickness of the several walls, and with tooled edges. The *several flues* on the ground-floor, whether for hot or cold air, are to be fitted with cover-stones of self-faced 3-inch York, with tooled joints, jointed and set in cement; the cold-air flues in the studies are to have stones 3 feet long each. The cold-air flues in dining-hall are to have length of 2 feet 3 inches. The hot-air flues in the studies are to have stones 3 feet long; those of the short flues are to be in 2 feet 9 inches length, as are the covers of the flues of the large school-room; the flues for the upper dormitories are to be covered with stones, each 2 feet 9 inches long; or in all cases let the length of the stones equal their width—which width is to be to the outside of the sides of the several flues.

The *floor grating to the Hall* is to be fitted with a curb of York stone, 5 inches × 4 inches, rebated on the top edge for the grating; the top is to be rubbed, the upright face tooled; the heading-joints are to be fitted with double plugs of lead.

The *entrances and exits* from the 14-inch × 4½-inch flues, are to have lintels of 3-inch tooled York, each 2 feet long × 4 feet 6 inches wide; the edges are to be tooled.

The entrances from the foul-air flue-trunk into the tower shafts and flues are to be fitted with lintels of 3-inch York the full width of the wall; the edges are to be tooled.

The gratings of outlet in the schools are each to be fitted with a rubbed York stone, 2 feet 3 inches square and 3 inches thick; the edge is to be rubbed all round, and the perforation is to be rebated for the grating. The gratings for the studies are to be 3 feet × 2 feet 3 inches, of 3-inch rubbed York, with jointed edges, the perforation being rebated for the grating. The outlet-gratings in the lower dormitories are to be fitted with rims of 1½-inch slate, 2 inches wide, and rebated to receive the grating; the top edge is to be rubbed, the others are to be sawn; the angles are to be mitred and screwed together; the gratings are to be screwed to the slate with 2 screws to each.

A tooled York 3-inch *landing* is to be cut for and pinned into the walls, at the base of the *diagonal angle-flues* in the Tower. The *lintels over the out-flues*, from the warm air into the upper dormitories, are to be 6 inches thick and the full thickness of the wall; the under side and edges are to be tooled.

Provide the quantity of 430 feet super. of 2½-inch tooled York, 18-inch wide average, with tooled edges for the gathering over and diversion of flues, as may be required.

Out-buildings, &c.—The *culvert of the privies* is to have a stone 18 inches × 18 inches, of 3-inch tooled York, with perforation for the outlet-plug, rebated to receive the same, and run with lead. A *cover stone* of 3-inch tooled York is to be provided for each of the culvert outlets, 3 feet 6 inches × 3 feet, perforated with an 18-inch perforation, and fitted with a moveable cover-stone, tooled all round, and fitted with bearing-bevelled joints; the lift-stone is to be fitted with a sunk eye, and leaded; those covers are to be set in cement. York-stone tooled bearers, 4½ inches × 3 inches, and 27 inches long, are to be fitted to carry the half-brick walls *over the privy culverts*. The *risers of the privies* are to be in inch self-faced slate, cut and pinned into the side walls, with sawn edges. The *urinals* are to be formed with a back of inch slate, in 4 slabs to each; the face is to be rubbed; the joints are to be rubbed; the ends are to be rubbed on one side, with rounded outer edge; the divisions are to be rubbed on both sides, and are to have rounded edges; the whole of the joints are to be set in oil cement, with countersunk holes and brass or copper screws. A line of 3-inch tooled York, 18 inches wide, with tooled edges and sunk channel, is to be carried down the back of the urinal; the channel is to be sloped to the centre, with 2 sloped ends; the centre is to have a 6-inch brass grating, let into the stone and leaded; the slate uprights are to be grooved into the stone and set in cement; the slate divisions, where they cross the channel, are to have a half-round cutting formed over the same.

Servants' Water-closets.—The several door-openings are to be fitted with 4-inch sills of tooled York stone, with jointed and tooled edges as before, morticed for the frames and pinned into the walls. A *channel* of 3-inch York stone, 12 inches wide, with 6-inch sunk channel, is to be fitted in the yard for the *men's urinal*; the slate divisions are to be grooved into the same; the divisions are to be of inch slate, rubbed on 2 sides, with rounded outer edges; the wall-edge is to be cut for and pinned in with cement; where the slate crosses the channel, it is to be fitted with notches, as before described.

The *Coal-shed, Engine, and Boiler-house.*—The floor of the engine-house and boiler-house is to be paved with 2½-inch tooled paving, laid in mortar and bedded on a prepared concrete foundation, 4 inches thick. The floor of the coal-cellar is to be of well-prepared concrete, 6 inches thick.

The *Washhouse and Laundry.*—The draw-out for the clothes-horses is to be paved with 3-inch tooled York, bedded in mortar, close-jointed, and set in cement; grooves are to be cut for the iron runners and leaded; the edges of this pavement is to be set fair and tooled. The internal doors are to be fitted with sills of 4-inch York, the width of the wall, with tooled edges; the external door is to have a step 14 inches × 7 inches, the whole morticed for the door frames. The window sills are to be of tooled York as described above. 3-inch York templates, tooled on face and edge, are to be fitted for the iron bearers and roof tie-beams. The whole are to have iron dowels, let in and leaded.

The *yard gates* are to have a York stop 3 feet × 14 inches × 7 inches, with tooled rounded top, with stop-box let in and leaded; also a tooled York step sill of 14 inches × 7 inches, with rounded edges; the hinge stones are to be of 6-inch tooled York; they are to be tooled all round, and are to be notched for the gates; the lower stone is to be chamfered on the upper edge. The side wicket gate is also to be fitted with a tooled York step, as above, with mortices for the frame. The top of the side walls between the piers is to be fitted with a coping of box stone, 18 inches × 4 inches, with a sunk weathered top, plain edge, and throated bed; 4 small box caps, 18 inches × 6 inches × 6 inches, are to be fitted to the top of the wing piers, which are to be wrought and moulded on the seen face. The great piers are to have caps of box stone, 29 inches × 29 inches × 9 inches; the top is to be sunk and weathered, the bed throated, and the other parts plain worked. The chimney shaft for the engine is to have a circular-moulded cap, got out of 17 feet 4 inches of stone, 3 feet 9 inches × 2 feet 2 inches; the several stones are to be double-plugged together with lead.

The *offices at the north front*, beyond the kitchen and scullery, are to have *external steps*, 14 inches × 7 inches, and the internal doorways 4-inch sills, by the width of the wall, as before described; the window-sills are to be as described for the other offices. Two *shelves of inch slate*, rubbed on one side, with rounded edge; the cross-shelf is to be of the same, with splayed bearings on the side shelves; the whole of the wall ends and edges are to be pinned into the walls with cement. A *stone stop*, 14 inches × 7 inches, and 2 feet 6 inches long, with tooled rounded end, is to be fitted to the *folding gates*, in the wall of the office yard, with the keeper-box let in and leaded.

The *rain-water tanks*, near the offices of the north front, are to be fitted; a circular cover of 3-inch self-faced York, 2 feet 9 inches clear, and a tooled York cover of 28 inches square is to be fitted level with the surface, the edges being tooled all round, and fitted on the top with 2 sunk eyes let in and leaded. All the other rain-water tanks are to be fitted in the same manner.

Generally.—The Mason is to provide all the stone described in the drains for dip-stones, covers, and bearers. Also all that described or required for the several air and ventilation flues; and all that has been described in the Bricklayer, or that may be described for the Carpenter, whether in templates, bearers, or carriage-pieces; all the shown edges are to be tooled or rubbed according to the finish of the parts adjoining; the faces that receive all bearers, &c., or which show, are to be tooled.

The Mason is further to *attend on the other trades*, and to cut all openings, holes, notches, grooves, &c., in stone that may be required by them. He is also to make good all injuries and defects in the stone works, whether arising from weather or accident, and is to leave the whole clean, clear, and perfect, in all its departments and parts.

Where many things of the same sort occur, it is to be understood that they are all to be like the one described, even although that description makes no mention of them in the plural.

CARPENTER.

The whole of the *timber* is to be from the Baltic, and is to be free from large knots, shakes, or sap-wood, and is, in all cases, to stand the sizes figured or described when finished; all tie-beams and girders are to be taken from the outside of the log, and all scantlings are to measure from the saw. The *deals* are, in all cases, to be yellow, and from the Baltic, they are in all cases to stand the thickness from the saw, and are, like the timber-stuff, to be free from all defects.

Generally.—All *timbers*, where shown, are to be *wrought;* all edges of deal are to be shot, and all framings are to be neatly fitted; all tenons and laps being square and full all through. The Carpenter is to do all the *levelling* required by the Excavator, and provide him with all sights and bench marks; he is to provide all kerbs and trammels for tanks and vaults, and all other things requisite for the perfect accomplishment of his operations. He is also to erect all the necessary planking and boarding required for building the foundations of concrete, where they are formed above the present surface. He is also to provide all templates, moulds, and trammels required by the Bricklayer; also all the centring for the vaults, cellars, funnel, &c., as required for the arches under the level of the ground-floor; also all centring for all the half-brick trimmers, &c., above that level; also all centres, bearers, and moulds for the external brickwork where it is arched or cut, with all manner of moving, shifting, and takings down, as may be required during the progress of the works. He is also to provide all templates, moulds, and centring, with their strutting, as may be required by the Mason for the whole of his external work; and he is further to give all the working levels, within and without the buildings, so as to secure the general accuracy of the whole. He is further to attend upon all the other trades not herein specially mentioned, and to do all manner of cuttings away for and makings good after them; he is to make all Plasterer's moulds to templates, to provide all Smith's templates, to cut away for and trim for the Plumber, and to cut all rebates, notches, and holes that may be required for him, in short, he is generally to attend upon all the other trades, and is to make good after them where required.

Roofs of Towers are to be framed and constructed as detailed upon the drawings.

The *dormers* are to be fitted with a solid frame 6 inches × 3 inches wrought all round, and filled with a 2½-inch circular frame, divided into 4 quadrants, the quadrants and the spandrils are to be filled in with cast-iron grill ornaments secured by screws; the whole frame is to be well secured to the timbers. The *skeleton framing* of these dormers is to be formed with angle posts 4 inches × 4 inches; common filling-in pieces 4 inches × 2 inches; rafters and ceiling joists of 4 inches × 2 inches; the whole being framed and spiked together; the top slopes and the gusset pieces are to be covered with ¾-inch boarding, with edges shot. The *face* is to be finished with a continuous architrave round the square, which is to be moulded and mitred; this architrave is to be turned on each angle at 2 inches back from the angle to form the architrave of the side pilasters, which are to be formed of 2-inch deal, wrought all round and fitted with a moulded cap and base; the upper part is to be fitted with a carved scroll-truss and a droop of flowers 30 inches long; the whole is to be fixed with screws. The *cheeks* are to be covered with inch boarding; the face of the pediment is to be covered with the same, wrought on the face; the top of the horizontal cornice is to be covered with the same; the *cornice of the pediment* and the return cornices are to be got out of deal, mitred as shown, and fitted with all the necessary backing brackets; the frieze is to be swelled on the face, and is to be mitred and broke round the top of the pilaster as shown. The tops of the pediment cornice where broken round the pilaster, and the point of the pediment, are to be fitted with turned balls 6 inches in diameter on square dies, and moulded necking; the heights of the dies are to be suited to the width of the projection; they are to be bedded in white lead and secured with screws. A large shell of Atkinson's cement is to be modelled to suit the tympanum of the pediment; it is to be painted 5 times in oil and well secured with screws.

The *roofs of the dormitories* are to be covered with ¾-inch boarding shot on the edges, close fitted at the several junctions and angles, and provided with all the necessary tilting fillets to the eaves and gutters. The backs of the Towers are to be fitted with a gutter having 1-inch gutter boards and bearers, with all necessary gussets, rolls, and drips; the ridge and hips are to be fitted with 4-inch rounded ridge and hip-rolls, which are to be grooved for 1½-inch ridge, and well secured to the same with split point spikes. The eaves of the upper slope of the roof are to be fitted with a moulded cornice got out of 3-inch deal, which is to be well secured with screws to the feet of the rafters; all the angles and the heading joints are to be set in white lead and tongued with zinc tongues.

The *hips and ridges* are to be 11 inches × 1½ inches; they are to be scarped together where joined. The common rafters are to be 5 inches × 2 inches; they are to be bevel-fitted to the ridge hips and cornice, and notched and spiked to the purlins and poleplate; the purlins are to be 6 inches × 3 inches; they are to be tennoned and housed to the principals and scarfed and spiked over the same. The poleplate is to be 6 inches × 3 inches, and is to be fitted in the same manner.

The *tie-beam* of the principals is to be 8 inches × 3½ inches, and is to be wrought on 3 sides, the lower edge being stop chamfered; the rafters are to be 5 inches × 3½ inches, the struts 3½ inches × 3½ inches, the king bolt of inch round rod with double nuts and washers; the king head is to be cast in ¼-inch iron substance and hollow; the cheeks are to be fair with the face of the timbers, which are to be well fitted home within the same, and are to butt together at the point. The feet of the rafter is to be fitted with a hollow cast-iron shoe of ½-inch metal, into which the rafter is to be well fitted home; these shoes are to be fitted into the tie-beam, and each secured with four 3-inch coach-headed screws; the points of the tie-beams are to be allowed to run over the head of the lower slope, into which it is to be notched and spiked; the lower end of the king rod is to be fitted with a turned patera, to cover the nut over which it is to be secured. Patterns are to be made for the cast head and shoe. The *ends of these roofs* are to be fitted with half tie-bearers as before; they are to be tennoned and housed into the first tie-beam and secured thereto with a strap bolt with caulking, staples, screws, and nuts; the rafter and braces, with the adjuncts, are to be the same as for the other principals.

The *ceiling joists* are to be 5 inches × 2 inches, and are to be notched and spiked to the back of the tie-beams; these are to be thinned under the wood trunk where the foul air is carried along the roof, as shown in the drawings.

The *lower slopes* of these roofs are to be covered with ¾-inch boarding as before, shot and close fitted in the same manner, and fitted with all the necessary tilting fillets to the eaves and dormers, &c. The head for this slope is to be 8 inches × 5 inches, and is to be scarfed and wedged at its junctions, dove-tailed lapt at its angles, and fitted with a dragging tie, &c., of the same, as long as the slope in the angle of the ceiling will allow. The kerb sill is to be 9 inches × 5 inches, and is to be scarfed and looped as the other; it is to be secured by coach-headed screws to the cast-iron angle-bearer, and between the same it is to be bedded on the wall. The posts under the tie-beams are to be 6 inches × 4 inches, and are to be tennoned to the head, bird's-mouthed and notched to the sill, to which it is to be well spiked; the top is to be secured to the tie-beam by an angle knee of cast-iron, which is to be well secured to them with coach-headed screws, 6 to each. A post is to be fitted to the side of each dormer, of the size of 6 inches × 3 inches; the common quarters are to be 6 inches × 2 inches; the posts under the angles of the kerbs are to be 6 inches × 4 inches; the hips are to be 6 inches × 3 inches; the whole are to be tennoned and housed, &c., as described for the posts under the tie-beams; the several trimmings for the chimneys are to be in 6 inches × 2 inches; those for the dormers, 6 inches × 3 inches. A wall plate of 4 inches × 3 inches is to be placed on the inner top of the wall, and it is to be notched into the quarters over, and spiked to the same on both sides; the hips are to be fitted with rolls of 3 inches × 2½ inches.

The *top of the dormer pediments* are to be covered with inch deal for lead; the grooves and all other necessary rebates are to be cut for the plumber; the checks of the dormers are to be fitted in the same manner; both are to be fitted with the necessary tilting fillets for the slates; the face and returns of the pediment are to be fitted with deal cornices to agree with that of the eaves of the top slope of the roofs, which is to be fitted and mitred as shown; the upper part of the horizontal cornice of the pediment is to be covered with an inch board; these cornices are to be fitted with all the necessary backings as required; the ridge of the dormers is to be in 1¼-inch deal and 6 inches wide; the rafters 4 inches × 2 inches; plate, 4 inches × 2 inches; angle-posts, 4 inches × 3 inches; check quarters, 4 inches × 2 inches; the front head, sill, and quarters, 4 inches × 2 inches; ceiling joists, 4 inches × 2 inches. The face of the dormer is to be fitted with a moulded architrave, and a return lining of inch deal 3 inches wide; they are to be divided into two compartments by means of a mullion of 1½-inch deal, the upper face of which is to be fitted with a moulded truss 12 inches long, with moulded cap, which is to be screwed to the mullion.

The *backs of the chimneys* are to be fitted with gutters of inch deal, with bearers average 9 inches wide, with gusset-piece on either side; care is to be taken in the trimming, &c., that no part of the wood is within half an inch of the brickwork; these gutters to chimneys are to be fitted with all the necessary tilting fillets.

The *cornice gutter of the eaves* is to be formed of 1½-inch yellow deal; the back and front is to be 17 inches wide, and the soffits 18 inches wide; the parts are to be tongued together, and the end joints, which are to be broken, are to be cross-tongued; all the joints are to be set in white lead; the front edge is to be throated, and the top front edge is to be beveled; the large cyma and the small OG, and fillet under the same, is to be formed of deal, moulded, as shown; the top is to be beveled at an angle of 45° from the edge of the gutter-front; this moulding is to be bedded in white lead, and screwed to the front of the gutter; the inside of the gutter is to be fitted to all the necessary drips and falls, which is to be made up with all necessary bearers and inch boarding, all of which is to be secured to the gutter with screws; the upper edges of the two sides are to be stayed with stays of stout copper tubing, flattened at the ends, and screwed with metal screws; these stays are to be 1 on each side of every flue, 2 at each angle, and 1 every 5 feet apart between these several distances; the back of the gutter is to be notched back upon the chimneys, and the outside of the flues, before they are fixed, are to be rendered with cement and hair, in a thin smooth coat; the under side of the gutter is to be secured by screws to *cast-iron cantilevers*, of ⅝-inch and ½-inch iron substance, each having 4 screw-holes. There are to be 252 of these, divided equally around the two dormitories, at as near equal distances as may be; each is to have a York template, 9 inches × 9 inches × 2½ inches, to stand upon. These gutters are to have tongued and mitred angles, secured by screws; the ends next the Towers are to be cut for and pinned in with cement; the sloped end is to be in the line of the brick face; holes are to be cut in the cesspools for the down-pipe nozzles.

Roof of the Centre Building, North Front—Clock Tower.—The top of Tower under the pine is to be formed of 3-inch deal, and is to be moulded and mitred at the angles, and prepared for covering with lead; the second curve is to be formed out of 3-inch deal, glued up, moulded, and mitred; the inside of the angles are to be fitted with pieces of 3 inches × 3 inches, and a kerb of 6 inches × 2 inches, lapped at the angles, is to be fitted to the top of the circular domed part; the circular part is to be covered with ¾-inch boarding, in narrow widths, with shot edges, close fitted for the angles, and grooved for the flush joints in the brickwork; the hips are to be fitted with rounded angular hip rolls, 2 inches × 2 inches; each face of this dome is to be fitted with an *oval dormer*, average 12 inches; they are to be glued up in narrow widths of 1½-inch deal, and canvassed as has been described for the over dormers of the dormitory roofs; the kerb to this dome is to be got out of 4 inches × 3 inches, lapped at the angles; the *ribs* are to be got out of 2 thicknesses of ¾-inch deal, out of board-wide; they are to be tenoned and lapped against and into the top and bottom kerbs. The moulded *cornice* is to be formed out of 3-inch deal, mitred as shown, and fitted with all necessary brackets; the angles of the cornice are to be fitted with turned wainscot, 6-inch balls, with square die and necking. The *platform of the belfry* is to be fitted with a deal moulded cornice, as shown, got out of 3-inch stuff, mitred and fitted as shown; the posts of the angles of the belfry are to be 6 inches × 3½ inches, wrought all round; the head and sill are to be the same; they are to be fitted with a deal moulded architrave, 10 inches wide; the uprights to the openings are to be 7 inches × 3 inches, fitted with a stopped rebate; the elliptical head is to be out of 12 inches × 3 inches, wrought all round and framed; the spandril is to be sunk out of the face, and the centre is to be fitted with a plain moulded key, well secured with screws. A kerb of 6 inches × 3 inches is to be fitted within the arch for *hanging of the bell.* *Angle ties* to be fitted to the two upper kerbs of 6 inches × 2 inches, as also diagonal braces for the rod-bolt to pass through; this bolt is to be of inch iron, and is to be bored through from the top of the woodwork; it is to have a top collar to stop against the top moulding, and it is to be fitted on the lower part with washers and nut to hold it down; the point is to be tapped with a screw to secure the pine to its place. The *angle scrolls* are to be out of 2½-inch deal, neatly fitted to the angle; it is to have the scroll-parts made up by glued-on pieces, which are to be boldly relieved, and the back is to be fitted with droop of fruit from the upper ears; these are to be 3 feet 3 inches long, and are to girt 3 inches × 4 inches.

The flat of the belfry is to be covered with inch boards, in narrow widths, mitred at the angles and weathered; the top is to be fitted with rolls, 1½-inch × 1½-inch, and the bottom of the posts are to be rebated to receive the lead flushing; the bearers and joists are to be out of 6 inches × 2 inches. The die of the belfry is to be covered with inch deal, wrought on one side, and is to be mitred at the several return external angles; the quarters of the die are to be 4 inches × 2 inches. The cover of the OG pediments is to be of inch deal, in narrow widths, and grooves are to be cut for the flush lead joints. The cornice at the straight parts are to be got out of 3-inch deal, and are to be mitred and fitted, as shown; it is to have all necessary brackets of 1½-inch deal; the level part under the OG is to be fitted with an inch deal covering. The OG scroll-head parts, opposite the cornice, is to be got out of the solid, as shown. The apex of the pediments are to be fitted with scroll-headed shields, with fruit, got out of deal, 18 inches × 18 inches, with 10-inch projection; the tympanum is to be fitted with a pendent of fruit and ribbons. The upper scrolls on the belfry are to have carved pendants coming from their ears, and 27 inches long. The spandrils of the belfry-openings are to be fitted with carved spandrils of wreaths and ribbons, 18 inches × 15 inches, with 2-inch projection; the plain keys, already described, are also to be carved on two sides and profile. Carved vases of Caen stone, dryed and painted in four oils; they are to be 3 feet high and 18 inches in diameter; they are to be secured by two iron dowels, and lead to each; the frieze is to be got out of 2-inch deal, and swelled on the face; it is to be mitred as shown. The architrave under the frieze, and round the clock face, is to be moulded-in, 14 inches wide; it is to be mitred round the clock face, and also returned round the pilasters and sides. The spandrils are to be of inch-slate, rubbed on one side, fitted with holes and screws of metal.

The *clock faces* are to be of *inch slate*, rubbed on one face, with the hours engraved in Roman numerals; the minutes are also to be pointed; these minutes and hours are to be twice gilt with pure gold; the whole is to have holes and screws. The *clock faces* are to be enclosed with circular deal moulded rim, 6 inches wide, with holes and screws through the slate; framed grounds of inch deal are to be fitted under all these architraves; No. 4 clip shields, of carved deal or cast-iron, are to be fitted to the circular moulding of each clock face. The *spandrils* are to be fitted with *cast ornaments of Atkinson's cement*, which are to be painted in four oils, and screwed through the slates. The *margins* of the return sides are to be formed of *inch slate*, rubbed on one face; they are to be mitred and tongued at the angle; the panel-face is to be in one slate; both panels and margins are to have all necessary holes and screws; the several edges that are seen are to be rubbed; the panels are to be fitted with a moulding rim in Atkinson's cement, of 2 inches girt. The *side pilasters* are to be out of 1½-inch thicknessed rubbed slate, 7 inches wide, which are to be bedded in oil cement and screwed. The face of these pilasters are to be fitted with trusses 2 feet long, 7 inches wide on face, and 9 inches projection, screwed to the slate, being previously painted in four oils; droops of flowers, 30 inches long, 5 inches × 4 inches diameter, are to be cast in the above, painted and screwed in the like manner. The *cornice to the lower part of the Turret* is to be formed of 2½-inch deal, and is to be moulded and mitred, as shown, and backed with the necessary brackets of 1½-inch deal; the cover is to be of inch deal. The faces of this part are to have the *margins* formed of *inch rubbed slate*, 7 inches wide, with rubbed edges, as before. The panels are to be each formed of one slab of inch slate, as above, and the whole are to be fitted with all necessary holes and screws to secure them to quarters. These panels are to be fitted with a 2-inch moulding of Atkinson's cement—the lower margins are to be 13 inches wide.

The posts for the angles of the Tower are to be 5 inches × 5 inches, and are to be 27 feet 6 inches long; they are to be well secured to the attic-floor, and to have a head of 5 inches × 3 inches fitted to them and lapped at the angles; the quarters are to be 4 inches × 3 inches, and the interties 5 inches × 2 inches. The bearing sill to the upper posts is to be out of 5 inches × 4 inches. The curved pediments are to have rafters out of 7 inches × 2 inches, and bearers out of 4 inches × 2 inches.

The flat of the North Building is to be covered as above described.

The *pediments* behind the stone are to be covered with inch-boarding close cut to the stone, and slope valley, as the lead is to be dressed flush on the surface; cross grooves are to be cut for the soldered joints; the ridge is to be 6 inches × 1½ inch, the rafters 6 inches × 2 inches.

The *lantern of the Hall* is to be provided with a centre hexagonal post, 6 inches diameter, 3 feet long, to form the core of the upper portion; the top mouldings under the pine are to be got out of deal and mitred round the post, the curve under is to have ribs out of 1½-inch deal, covered with inch boards in narrow widths, close-jointed and fitted at the mitres. Panels with margins are to be sunk on each face of this curve; these are to be ½-inch deep. Cross grooves are to be fitted where necessary for the lead, which is to finish flush in its several parts. Turned balls of wainscot, 4 inches in diameter, with necking and square die, are to be fitted to the points of the several angles. The moulded cornice is to be got out of deal, and is to be fitted with a break under each of the balls, and all necessary mitres. The ring for the kerb is to be out of 4 inches × 2 inches, the joists of the soffits 3 inches × 2 inches; the soffit itself is to be of inch deal, wrought on one face, glued up and cross-tongued, close fitted at the sides, and screwed to the joists. The *angle posts* are to be out of 6 inches × 2½ inches, wrought all round and framed; the angle scrolls are to be out of 2½-inch deal, well screwed to the last; these scrolls are to be carved on the face and returns. The *inside jambs* are to be out of 3 inches × 3 inches; they are to be beveled on the one edge and framed short; the heads of the elliptical openings with raised margin and key are to be the same finished thickness as the above; is to be wrought all round, tongued on the top and sides, with framing into the jambs; the *kerb under the sill* is to be in 4 inches × 2 inches, and the platform is to be out of 2-inch deal, weathered to the openings. The back of the uprights are to be grooved to receive the lead flushing; the bearers are to be 4 inches × 2 inches. The moulded nosing forming the *top of the domed part* is to be got out of 4 inches × 2 inches, mitred to the several angles. The boarding is to be out of 1½-inch deal in narrow widths; the interior of this dome is to be covered in the same manner, but finished on the face, not for lead but for painting; the edges of the several parts are to be neatly jointed. The *circular ribs* are to be got out in two thicknesses of ¾-inch deal, got out to a width of 3 inches; the cover boards are to be screwed to these ribs; the face of the outside covering is to be fitted with a sunk panel on each front; *rounded rolls* are to be fitted to the angles; the inside is to be fitted with margins to form panels inside, which are to be fitted with a small OG moulding; the angles are to be fitted with a cock bead. The centre of the outside panel is to be fitted with a circular kerb of 1 foot 2 inches outer diameter. This is to be glued up in narrow widths, canvassed on the outside and wrought fair on the inside; these kerbs are to be brought through the ribs and linings, and finished on the inside with a moulding; the outside is to be finished upright.

The *cornice of the lantern* is to be formed out of 2-inch deal, wrought and moulded with dentils. It is to be broken at the angles round the top of the pilasters, and is to be fitted with all necessary brackets of 1½-inch deal; the covers are to be of inch-deal wrought one side. Each of the angles are to be fitted with moulded and *carved vases in Caen stone;* they are to be 2 feet high and 9 inches in diameter, and each to have 1 iron dowel, and further to be secured with screws to the timbers. The *frieze and spandrils* down to the springing is to be got out of inch deal, wrought on one side, well secured to the posts, and cut to the arch. The face of the frieze over the pilasters is to be fitted with a *carved and moulded truss*, of the width of the pilasters; the architrave of the cornice is to be 8 inches girt, and is to be moulded and mitred round the tops of the pilasters, as shown. The pilaster shafts are to be 5 feet 3 inches high, 6 inches wide, and 3-inch projection. The upper part of the front is to be paneled with a sunk panel; it is to be fitted with a carved Corinthian capital, 8 inches high, with proper base, and the whole is to be well secured with screws. The lower part of the face is to be fitted with a carved scroll truss, 3 feet 6 inches long, 6 inches wide, and 6 inches projection, the scroll heads being well brought out from the upper ears a droop of fruit and flowers, 2 feet 9 inches long, and 3½ inches × 3 inches diameter. The filling-in dressings to the openings are to have two pilasters, 3 feet 6 inches long × 5 inches × 2½ inches, one side of which is to be beveled against the angle post. They are to be fitted with moulded caps and bases; the semicircular head over these is to be fitted with a moulded architrave and moulded key, the soffit of which is to be returned home to the sash frame. The transomes to the imposts are to be moulded to agree with the caps into which they are to be mitred. The pedestals of the pilasters are to have moulded caps, mitred all round; the die of the same is to be got out of 3-inch deal so as to be solid; the base moulding and plinth is to be got out of deal, and it is to be broken round the pilasters with mitred angles. A moulded deal cornice is to be fitted to the top of the lantern die or pedestal; it is to be mitred round the lower pilasters, as shown, and fitted with the necessary brackets of 1½-inch deal; the top weathering board is to be of inch-deal. The lower pilaster shafts are to be 3 feet 3 inches long × 10-inch face, and 3 inches projection. It is to be paneled on the face, which is to be fitted with a moulded face, mitred at the angles. The angle posts, which are to form the core for the pilasters, are to be 5 inches × 5 inches, wrought all round; the head sill and interties are to be out of 5 inches × 3 inches, with filling-in quarters of 3 inches × 2 inches, or as may be required. The paneling between the lower pilasters is to be 1½ inch framed and moulded; they are to be close fitted to the several parts. The whole of the foregoing cornice, entablature, pilasters, pedestals and lower pilasters, cornice and paneling, are to be repeated on the inside of the lantern, except the scroll trusses and droops, which are only to be applied to the outside. A kerb of 4 inches × 2 inches, and quarters 4 inches × 2 inches, are to be framed at the ceiling line of the lantern inside, and grounds are to be fitted to receive the mouldings and linings; the line of the ceiling, and that of the lead flat, are to be fitted with moulded cornices, which are to be fitted with all necessary cover pieces and brackets, and are to be mitred round all the projections.

The roofs of the arcades of the South Front of the Hall and School are to be covered with inch self-faced slate slabs. Next the building it is to be fitted with gutter boards and bearers 14 inches wide; each is to have a centre roll, 4 drips, and 2 cesspools, and shoots to the down-pipes; the bearers next the gutters are to be 12 inches × 2 inches; the upper bearers are to be 9 inches × 2 inches. York templates, 9 inches × 9 inches × 2½ inches, are to be provided for these bearers. Cross bearers, 9 inches × 3 inches, are to be fitted under the joints of the slates, which are also to have York templates 9 inches × 9 inches × 2½ inches; the ceiling joists are to be 3 inches × 2 inches, hung up with straps to the bearers over where required. The roofs over the kitchens and sculleries of the north front are to be covered with inch boarding for lead, with all necessary drips and rebates; the rolls are to be 2 inches × 2 inches; the joists are to be 9 inches × 2 inches; the plate 4 inches × 3 inches. A bearer 12 inches × 6 inches, wrought on 3 sides, is to be fitted under the centre of these joists, and is to have templates of York, 14 inches × 14 inches × 3 inches. Ceiling joists of 4 inches × 2 inches are to be fitted to the kitchen, with a wall-piece 4 inches × 2 inches, and iron corbels as before.

Attic Floor of the Dormitories.—Deal brackets of 5 inches × 3 inches are to be fixed on the rafters, just over the internal wall plate all round. The joists are to be 10 inches × 2¼ inches; they are to be 18 inches from centre to centre, while all the other joists, quarters, &c., are to be 14 inches; the end next the Tower is to have a trimmer of 10 inches × 2¼ inches, into which the joists are to be trimmed by tennons and double housings. The wall plate on the external end walls is to be 4½ inches × 3 inches, upon which the joists are to be notched and spiked. Iron corbels are to be fitted to the wall joist next the Tower, 4 to each. The *girders* for the carriage of the dormitory floors are to be 15 inches × 6 inches, sawn all sides, each flitch 31 feet 3 inches long; these are to be fitted against iron truss plate flitches, and are to be lined where seen with 1½-inch deal, which are to be wrought and grooved for the ceilings, the lower angles are to be stop-chamfered; the several heads and nuts of all coach screws and bolts are to be neatly let in; the wrought-iron plate is to be 15 inches × ⅜ inch, and 31 feet 3 inches long; they are to be secured to the one flitch with 10 coach-headed 3-inch screws, zigzagged across the plate, the two flitches, and the iron one, the heads being let into the second fir flitch; the two flitches are to be bolted together with No. 7 bolts, of ¾-inch iron, with double nuts, and washers let in. Collars 1½-inch long and 1¾-inch diameter are to be close fitted round the ¾-inch bolt and through the flitch of iron, and let into the wood on either side; this is intended to save the bolt from the shearing force of the ⅜-inch plate; the ends of the girder are to be fitted with 6-inch *York templates* 27 inches × 21½-inch, moulded on the face, sunk notched on each side; the part seen to be rubbed, the bearing face tooled and fitted with 2 iron dowels, 4 inches × 1 inch × 1 inch, let in and leaded; the joists are to be bridged over and let into these girders. The top of each end of the girders is to be fitted with a strong standard *shoe of cast iron* to receive the pole-plate; the substance is to be ½-inch metal; each is to be close fitted to the wood bearings, and secured by No. 6 coach-headed 4-inch screws, and No. 4 strong 2-inch screws, from the inside of the shoes to the back of the gutter. The joists are to be covered with ¾-inch *rough boarding*, close jointed, and close cut to the ends; where the sides approach the walls they are to be kept away 1 inch, so as to allow for swellage from the damp cement floor.

One-pair Dormitories.—The *joists* over the two ends next the north, that is, the Committee-room and Visitors'-room, are to be 6 inches × 2¼ inches, and are to be only 14 inches from centre to centre, and the joists over the corridor are to be the same; the several ends are to be trimmed for as may be required; the several plates are to be 4 inches × 3 inches; the cross bearers that take the joists over the corridor are to be 6 inches × 4 inches, and are to have *York templates* 9 inches × 9 inches × 2½ inches; the centre bearing of the Visitors' and Committee rooms is to be fitted with a trussed bearer, prepared fir *flitches* 6 inches × 4 inches, *iron flitch* 6 inches × ¾, with No. 8 coach-headed screws 7 inches long, with holes through the iron, and 1 flitch; they are to be zigzagged from opposite sides of these flitches. These bearers are to have corbels of 6 inches York 18 inches × 9 inches tooled face and edge fitted with 2 iron dowels 3 inches × 1 inch × 1 inch, with holes and lead.

N.B.—The other floors were detailed in like manner.

N.B.—The several 6-inch joists on the various floors are to be *tenoned* and *double housed* into the trussed and other bearers and wall trimmers, and the 10-inch joists are to be *bridged* and *notched* upon the bearers and wall plates.

The *partitions* in the attic floor are to have heads and sills of 4 inches × 2½ inches, quarters 4 inches × 2 inches; the door jambs and heads are to be 6 inches × 2 inches, and are to be wrought on three sides, being reduced above to 4 inches. The several *bridges*, where the partitions stand between joists while they run the same way, are to be 4 inches × 3 inches. The whole of these partitions are to be properly framed together, and where it can be done they are to be braced.

Wood bricks for the dormitories are to be of 4 inches × 3 inches, and are to be fitted to all the window openings to secure the frames to, also to all the sills where there are window boards; also to all the door jambs to secure the door-frames and linings to; as a general rule, not less than 3 are to be fixed in any jamb; those of the windows, &c., that are finished in brick face, are to be short, so as not to show. The *window lintels*, where the windows have jamb linings and soffits, are to be 5 feet 6 inches × 18 inches × 3 inches; those of the small windows are to be 4 feet 9 inches × 18 inches × 3 inches; the lintels of the door openings where linings are used are to be 4 feet 6 inches × 9 inches × 3 inches.

Out-buildings.—The *roofs of the privies* are to be covered with ¾-inch boarding for slates with edges shot as before, fitted with tilting fillets to rakes and eaves; the rafters are to be 4 inches × 2 inches, wall plate 4 inches × 3 inches; the front bearing is to be upon the continuous head of the door-frames. *Servants' water-closets each side* are to have ¾-inch boarding to slates, with tilting fillets &c. as before; the rafters are to be 4 inches × 2 inches, the plates 4 inches × 3 inches. *Coal-sheds, boiler, and engine-house*, are to have ¾-inch boarding for slates, close jointed and fitted with tilting fillets as before; the rounded roll to the ridge and hips is to be 2½ inches × 2½ inches; the eaves are to be fitted with an inch board wrought one side and bevelled on the edge; the ridge is to be 9 inches × 1½ inch; the hips and the valley 11 inches × 2 inches; the common rafters 5 inches × 2 inches; the purlins 6 inches × 2½ inches; and pole plate 6 inches × 2½ inches, diagonal and dragging piece are to be out of 6 inches × 3 inches. The *trussed principals* are to have tie-beams of 8 inches × 3 inches, rafters of average 6½ inches × 3 inches, strutts 4 inches × 3 inches, a cast-iron king head of ½-inch substance hollow, and the rafters closely fitted home within the same; a king rod of ⅞-inch iron with double nuts and washers; a plate 18 inches × 2½ inches × ⅜ inch with No. 4 holes, and 2-inch screws are to be fitted to each; a heel strap of 2½ inches × ⅜ inch is to be fitted to the rafter and tie-beam with No. 3 coach-headed screws to each, and crossplate with double nut and washer; each end of the tie-beams is to be fitted with a tooled York template, 14 inches × 14 inches × 3 inches, with 1 wrought-iron dowel, 3 inches × 1 inch × 1 inch, let in and leaded. The ends of the roof are to be fitted with a half principal, with tie-beam and rafter with brace as before; it is to be tenoned and housed to the adjoining principal, and is to be secured thereto with a strap-tie of 2½ inches × ⅜ inch iron, having counter sink-holes and 2-inch screws. A *ventilator* is to be fitted to the top of the ridge, the cover of which is to be of 1-inch self-faced slate with sawn edges, bevelled and fitted to hips with screws and oil cement to ditto; the hips of the roof are to be 4 inches × 2 inches, and are to be wrought and bevelled to suit; the framing of the ends and fronts is to be out of 3 inches × 3 inches, the top rail being bevelled to the slates; the sill is also to be bevelled on the top; the several sides are to be filled with louvres got out of inch set to an angle and bevelled both edges; the grooves in the uprights are to be bevelled and stopped back from the front by half an inch; the trimmings for both front and end are to be in 2-inch deal prepared for the lead flashings; the inside of the *ventilator* is to be fitted with framed grounds to the ceiling, and two ¾-inch ledged flaps hung with 14-inch cross garnets, with *lines and pulleys* to open and close the same, with distance hooks to keep the same open. The *eaves* are to be fitted with a 6-inch OG *gutter*, having plain clips; they are to be screwed to the eaves' fascia, and the joints are to be set in red lead, and fitted with small nuts and screws.

The *wash-house roof* to be similar.

The attached offices to the kitchens of the north front buildings are to have their roofs covered with ¾-inch slate boarding as before, with tilting fillets to the rakes and the eaves; an eave's board of inch deal, 7 inches wide, with bevelled edge, is to be secured to the ends of the rafters; the rafters are to be 4 inches × 2 inches, the plate 4 inches × 3 inches, ceiling joists 4 inches × 2 inches, all properly notched, framed, and spiked as before.

All the *bearers*, *girders*, and, generally, all ends of main timbers that lay on York templates on the wall are to have a bed of *asphalted felt* laid under the same between the stone and the wood.

JOINER AND IRONMONGER.

Materials.—The *oak* used is to be of English growth and of good scantling, free from all sapwood. The *wainscot* is to be of good quality, dry, and well seasoned, free from all sapwood and foxiness. The *fir* is to be from the Baltic, of good quality, free from sap and large knots, dry, and well seasoned. The *deals* are to be from the Baltic, and are to be yellow, unless otherwise specially mentioned, dry, and well seasoned, free from all shakes, large knots, and sap.

Work—All the *thicknesses* and dimensions given are to be the *finished dimensions*, or nearly so, for the several pieces of work mentioned, as from the bench. All the *joinery* to be well framed, and put together in the most approved manner; all glued joints to be cross tongued; all joints to be framed; all internal angles to be dovetailed, or tongued and grooved; external angles to be dovetailed or mitred, and all painted work to be well nailed; neat woods are to be secret framed, glued, and screwed, where necessary.

All the *ironmongery* to be of the best quality and of approved pattern, in every department.

Upper part of west tower is to have the frames of the openings fitted with 2-inch ovolo casements, in small squares; the stiles are to have hooked beads and weathered grooves; the sill to have a metal weathered bar and groove; the outside of the casements to have a grooved and bevelled fillet; they are to be hung with 3½-inch wrought butts and a 4½-inch fastening; the soffit-cheeks and apron-pieces to be of 1-inch deal, tongued and grooved to the frame, and beaded and grooved to the plaster; the angles are to be mitred, tongued, and grooved together; the frame to have a tongued and rounded nosing. The *floor* of this upper room is to be of 1¼-inch deal wrought and laid folding; the opening to the stairs to have a rounded nosing, 4½ inches wide, tongued and grooved to the ends of the boards, and mitred at the angle; the skirting to be 6 inches wide, square edged out of 1-inch deal, tongued and mitred at the angles, and well secured to the wood bricks. The *staircases* from the floor below are to be of deal, with 1¼-foot tread, 1-inch risers, and 1½-inch strings; the treads are to have rounded nosings; these and the risers are to have glued blockings and brackets, secured to stout fir carriages and housed to the strings; the outer string to be wrought and staff beaded, the wall string wrought one face; both to be fitted with capping beads; the apron-piece to be of 1-inch deal, wrought and beaded. The newels to be of 3 inches × 3 inches, with single and double turnings and pendents; the handrail to be 2½ inches × 2½ inches, deal moulded, the upper end pinned into the wall, and the rest housed and pinned to the newels; the balusters to be 1 inch × 1 inch square, dovetailed to the treads and nailed to the rail.

Upper part of east tower, or belfry, is to be fitted with a *step-ladder to reach the bell.* Beam carriages 18 feet high and 18 inches wide over the sides and treads, in 1¼-inch deal; the sides and treads in 1¼-inch deal; the treads to have rounded nosings, and are to be grooved and nailed to the sides; one-fourth of the entire number being also pinned through the sides and wedged; the whole to be put together with white-lead; the upper end of this ladder is to be provided with strong hooks and eyes to secure it to one of the beams. The *window openings* on the first floor of the west tower are to have deal-cased frames, segment headed, with oak sunk and weathered sills, 1¼-inch pulley-stiles, and 1-inch linings, with ¼-inch parting slip and backing piece; they are to be fitted with 2-inch deal moulded skeleton sashes, with wide centre bar, and they are to be fitted with a drawn zinc bar, to pattern, mitred and soldered; each window in 24 squares; each window to have one sash-fastener of approved pattern, and to be double hung, with patent lines, brass-faced axle-pulleys and iron weights; the keeping leads are to be secured by brass screws, with sunk brass cups. The reveals are to have tongued and staff-beaded linings of 1-inch deal, the soffit being bent into a flat segment-head, the sill to have 1¼-inch tongued and rounded window-board, with bearers of fir well secured to the brickwork. The window openings of the first floor of the east tower are to have frames as above; but instead of sashes they are to have cast-iron grills in the skeleton sashes, as before; the inside of the frame where it is scribed to the brickwork, is to be fitted with cement fillets, 2 inches × 1 inch, run on the brickwork all round.

The *floor in the west tower* is to be of 1¼-inch deal laid folding; the opening to the stairs is to be fitted with a rounded nosing, 4½-inches wide, tongued and grooved to the ends of the boards and mitred at the angles; the skirting is to be of 1-inch deal square, 6 inches wide. The top of the stone staircase in the west tower is to have an enclosing newel, handrail balusters, and apron-pieces, as before. The top of the stairs on the east tower, being fitted with the bulkhead and enclosure, already described for the Carpenter, is to have wrought and framed proper door-case of fir, 4 inches × 3 inches, rebated and beaded, fitted with a 1½-inch bead butt, and square sash door, hung with 4-inch wrought butts, and a 7-inch iron-rim lock, brass furniture.

The *dormitory, attic floors.* The *windows* in the *tower staircases* are to be filled with window-frames and sashes as before, only they are to be square heads, and are to be in 16 squares, each hung and fitted in the same manner as the former sashes, and cement fillets are to be fitted round the frame.

The *doors of the Chamber Attendants' rooms* are to be 7 feet × 2 feet 6 inches, segment headed, 2-inch six-panelled square framed, 1-inch panels in narrow widths, tongued and beaded both sides, hung with 4-inch wrought butts, and fitted with 7-inch iron-rim locks, the door-cases to be 4½ inches × 3 inches, rebated and beaded; the heads segmental in these and all the other solid door-frames; the horns of the head are to be 9 inches long, built into the walls; the wood bricks are all to be well backnailed, and the heels of the stiles well stubbed into the several floors, whether of deal, cement, or stone. The *dormitory, corridor doors*, and the doors in the party wall of the towers are to be 8 feet × 6 feet out of 2½-inch deal, with flat segment heads. Each part of the folding-doors is to be in 6 panels, square framed with panels of 1¼-inch deal, in narrow widths, beaded both sides as before; each fold is to be hung with three 5-inch wrought butts. The fixed fold is to have a 30-inch strong barrel bolt for the top, and a 12-inch ditto for the bottom. These bolts are to have flap-handles, that are to turn into an iron socket plate in the rebate, so as to prevent the door being opened when it is locked. The upper keeper is to screw both on the soffit and face of the frame, and the lower keeper is to be let into the stone landing and beaded. Each door is to have a 7-inch strong iron-rim lock, so secured in itself and its staple as not to be undone from the inside when the door is locked; a strong wrought-iron cabin hook with strong staple and plate well secured to the wall and door to keep these several doors open when turned back; the frames of these doors are to be as before described, solid with segment heads, and fitted in the same manner.

The *dormer windows of the dormitories* are to have deal-cased frames in 2 widths, as already described for the other windows, the sashes being also the same, fitted in with 36 squares to each double dormer; the *sash-fastenings* are to be as before described. The soffits are to be plastered home to the groove of the frame, the *cheeks* are to be lined with 1-inch cross-tongued, wrought and staff-beaded *linings* tongued to the frames; the breasts under the windows are also to be lined with 1-inch deal as above, flushed in the line of the oak sill.

The *partitions* that form the *divisions of the separate bed places* and the corridor lines are to be framed in 2½-inch deals, as shown; the height is to be 8 feet 6 inches from the floor, the sill is to be 6 inches wide, the other framings to flush 4 inches where perfect, and the margins of the other parts are to agree. The general framing is to be moulded with an OG, as shown; the top rail being capped with the same moulding; the wall stiles are to be grooved for the cement linings on both sides, and fitted with an internal angled return to fit the ventilation tube. The parts that form the door-frame are to be rebated and beaded, the filling-in pieces are to be out of 1¼-inch, tongued and double-beaded in narrow widths, the doors are to be out of 1½-inch deal, square framed in 2 panels; the panels are to be of ¾-inch deal in narrow widths, tongued and beaded as before. The doors are to be 6 feet 6 inches × 2 feet 9 inches, each hung with 4-inch wrought butts, and each fitted with an approved 7-inch iron-rim lock. The cross partitions where they meet the slope of the kerb roof are to be framed accordingly; the whole of these partitions are to be fixed together at their intersections with screws, and secured to the wall and the floor with so many prepared holdfasts as will secure them in their places. These are to be screwed to the framings.

The *Dormitory Attendants' rooms* are to be fitted with enclosed *cupboards*, 7 feet 6 inches high, with 1½-inch framed fronts, 2 widths, and folding-doors, 6-paneled square framed; the interior of the doors is to be fitted with ½-inch rounded edge and mitred stops screwed on. Each cupboard to have 3 shelves in the height; these are to be 18 inches wide, cross tongued; the top is also to be of 1-inch deal, the edge being fitted with a 2-inch moulding; the ends and divisions to be of 1-inch deal, grooved for the shelves, the back to be lined with ¾-inch matched and beaded; the doors to be hung with 3½-inch wrought butts and 4½-inch deal locks. The brick set off in these rooms is to have a 1¼-inch rounded nosing, 4 inches wide; the upper iron sink to have its upper edge fitted with an oak kerb, 2 inches × 2 inches, rounded on the upper side and edges, and grooved for the metal, mitred and screwed at the angles; the side next the wall to have an inch square skirting, 4½ inches wide, tongued to the oak capping, and plugged to the wall.

The *lower dormitories* are to have *sashes and frames* the same as those described for the first floor of the western tower, hung and fitted in the same manner. The windows in the towers at this level are also to be fitted in the same manner, and are also to have cement fillets 2 inches × 1 inch, as already described; while those of the dormitories are to have cement linings to agree with the wall-linings; the window-boards are to be of 1¼-inch deal, with proper bearers well secured to the brickwork; the projecting ends of the window-board are to be rounded. All those *sides of the dormitories* that contain the windows are to be *laid with Atkinson's cement*, trowelled smooth to a plain face for painting, the angles of the window reveals being rounded. At the height of the deal framing and agreeing with the moulding on it, a moulding is to be run on the cement linings, mitred to the wood framing; the return ends of the rooms next the brick walls are to have cement linings as above. These *dormitories* are to have *framed partition* enclosures to the several bed-rooms, as described for those above, fitted and framed in the same manner, the doors being fitted and hung as before. The *large windows at the ends* of the dormitories are to have frames of solid fir in three divisions, out of 6 inches × 4½ inches, with cross transom and mullions, 6 inches × 2 inches, the sill to be of oak, sunk and weathered, and fitted with weather bars of metal. The inside and outside faces of these frames and mullions are to have narrow moulded panels, the whole is to be fitted in with 2-inch deal moulded casements, the lower part fitted with panels raised and moulded, the upper part with zinc bars as before, each window having 49 squares; all these casements are to have hooked rebates and weathered grooves. The centre division is to be hung with 2 pairs of 3½-inch brass butts, with 2 strong brass casement fastenings, and 1 strong wrought-iron cabin-hook, 9 inches long. The tops of the several side posts are to have Ionic capitals, with angular volutes, and moulded and mitred bases; the outside of the several casements are to have moulded narrow stops and water groove mitred. The transom is to have a moulded and mitred architrave, agreeing with that of the stone caps outside with which it is to intersect; the heads of these openings are to have semi-elliptical heads to agree with the upright framing, and with a sunk and weathered sill; the inner side of this head is to be fitted with moulded stops to agree with those of the stiles, and it is to be fitted in with an elliptical fanlight, glued up in two thicknesses, and fitted with moulded stops to agree with the others. This fan is to be fitted with elliptical radiating metal work for glass, moulded on the face, and well fitted and soldered together; the spandrils are to be fitted on both sides with the metal scroll work shown, which are to be screwed to the frame.

The *doors* of the dormitory and those in the party-wall of the staircase are to be the same as those already described for the upper floor.

Mezzanine Floor.—The *floors of the rooms and corridors* over the arcades of the school quadrangle are to be of 1-*inch deal folding*, so that over the arcade by the public kitchen these three corridors are to have a cement skirting 4 inches high. The several floors of the rooms of the mezzanine on both sides of the hall quadrangle are to be laid with 1-inch white folding-floors, those that are used for stores or cupboards to have a *cement skirting* as above. The other bed-rooms to have ¾-inch square skirtings, batten wide, with *narrow skirting* grounds, tongued at the internal and mitred at the external angles. The *water-closets* on the tower staircases at this floor are to be laid with 1¼-inch yellow boards, laid straight joint upon fir joists, 7 inches × 2 inches, with oak sleepers, 4 inches × 3 inches. This is to be raised above the stone floor, the outer joist forming a riser, and the ends of the floor boards being fitted with a nosing of 1½-inch oak, 5 inches wide, tongued to the ends of the floor boards, and rounded on the edge between the frame. The *doors of the closets* are to be 1½-inch square, framed in two panels, the panels to be thick and in narrow widths, beaded as before. Stops of ¾-inch deal, 2½ inches wide, are to be nailed to the door-case; these doors are each to be hung with a pair of 3½-inch wrought-iron butts, with wrought-iron handles on the inside. The doorcase is to be 5 inches × 2 inches, wrought; and the face and two edges beaded next the brickwork, and tenoned to the head and returns. The head is to be of the same, wrought all round, and is to be in one height for each set of closets; the return division walls are to be capped with fir, 5 inches × 2 inches, each piece dovetailed, lapped to the front head, and pinned to the wall behind.

The *windows* on this floor are to have deal-cased frames, oak sunk and weathered sills, fitted with 2-inch moulded sashes and zinc bars in 16 squares, each as before. They are to be double hung with patent lines and iron weights, as before. Those windows that are in the staircase, the studies, and kitchen, are to have lines, pulleys, &c., for opening them on the ground-floor; all the other windows are to be fitted with sash fasteners; all the windows in the net brickwork are to have cement fillet, as before; 54 of these windows are to have 1¼-inch deal window-boards, with rounded edge and return ends fastened to properly secured fir bearers; 28 of these windows are to have 1¼-inch deal window-boards and bearers, as above, the jambs being fitted with 1-inch tongued and beaded linings, and the soffit is to be of 1-inch deal, bent tongued and beaded to suit the window head. These soffits, and jambs, and sills, are to be tongued and grooved together, and those parts that are plastered are to be back grooved to the plaster.

The *lobbies* to the water-closets on the tower stairs and the doors to the long room over the arcade, are to have *doors* 6 feet 6 inches × 2 feet 6 inches of 1½-inch deal, square framed in 2 thick panels; the panels are to be in narrow widths, and are to be tongued and beaded on both sides; they are to be hung with 3½-inch wrought butts, and fitted with 7-inch iron-rim locks. Those upon the lobbies are to have prepared box-staples of wrought iron secured to the oak wood bricks, well secured to the wall; these are to be so placed as to allow of the lock bolt shooting into it when the door is opened and pushed back at night. Each of these lobby doors is to have a *cast-iron grating* fitted over it for *ventilation*, each equal in area to 216 square inches. If placed in the brickwork it is to be tied back with caulked straps; the door-cases are to be 4½ inches × 2½ inches, wrought on 3 sides, and beaded to the brickwork; they are to have long horns left to the heads, tenoned to the sill, and secured to wood bricks on each side; each frame is to have wrought straps of ¾-inch deal and 2½ inches wide.

The *Housekeeper's stores* are to be fitted with *enclosed deal cupboards* on 4 sides, 9 feet 9 inches × 8 feet 1 inch each; they are to have 1½-inch deal framed fronts in 3 compartments, with square-framed, 2-paneled doors. The housekeeper's stores south of her private apartments are to have their two sides also fitted with enclosed deal cupboards, that on the side next the door being in 2 compartments, that opposite in 3, all with folding-doors. The long room over the arcade is to have an enclosed cupboard fitted on the side opposite the windows in 3 divisions, a centre and 2 wings. The framing of the several fronts is to be beaded to the doors, grooved for the plaster of the ceiling, and scribed to the walls. The doors are to be hung with 3½-inch wrought butts, and fitted with 4-inch straight cupboard locks to pass. The folding-doors are to have 2 necked bolts, 6 inches long, to each fixed leaf; all the doors to have rounded and mitred ½-inch stops. The backs of these cupboards are to be of ¾-inch matched and beaded linings nailed to the enclosure and shelves, the divisions and ends are to be of 1-inch deal, the first being wrought on 2 sides, the last on 1. They are to be tongued and grooved to the front, the shelves are to be 1¼-inch, wrought both sides and grooved to the divisions; there are to be 3 shelves to each of the cupboards in the height, the floors of the cupboards are to be fitted with stops for the doors, as before, and the back linings are to be filleted; each angle at the centres of the long cupboards is to have a staff bead.

The *sinks* to the closets are to be fitted with wainscot rims grooved to the sinks, and mitred on the angles, rounded on the inner edge and front, the top edge being fitted with a skirting of 1-inch deal tongued to the capping and its angles.

The *water-closets* adjoining the above, and on the tower stairs, are to have 1¼-inch deal seats and risers, with dovetailed bearers and runners; the flap is to be framed, clamped, with a rounded nosing, hung with strong 3-inch brass butts. The seat-hole and handle-hole are to be properly cut, and the Plumber attended during fixing. The top is to have ¾-inch square skirting, batten wide, with proper grounds, the angles are to be tongued together, and the outer ends rounded; the riser is to have narrow grounds for it to fit between.

Ground-floor.—The *water-closets* as above described.

The *floors* are to be laid with 1¼-inch yellow battens, straight joint, and splayed headings; the floors of the Nurses' apartments are to be laid in the same manner. 1-inch deal *torus skirting*, 9 inches high, having narrow grounds for the plaster, and proper backings; the angles to be tongued or mitred as required.

The *windows* of the east and west buildings are to have deal-cased frames, with 2-inch moulded sashes as before fitted with zinc bars, fitted and hung as before described for the upper windows, and with approved 4-inch sash fastenings; 38 of these windows are to have 2-inch cement fillets to the brickwork, as already described for the other windows where the brickwork is finished, fair face inside, and these windows are to be fitted with 1¼-inch window boards, wrought one side and fitted with proper bearers; the front is to be rounded and the ends returned. The *windows of the east and west water-closets* at the north end, those of the Undermaster's common-room and library, and those of the Nurse's apartments, are to have circular soffits of 1-inch deal, with proper backings, and staff-beaded edge, grooved and mitred to the linings of the jambs, which linings in the water-closets and the Nurse's apartments are to be only the length of the window-board, and in the Undermaster's rooms are to go the length of the floor. These linings are to be of 1-inch deal, staff beaded, and fitted with proper backings; the water-closets, and Nurse's apartments are to have window-boards of 1¼-inch deal, with roundings and backings as before.

The openings on each side of the archway in the south ends of the wing buildings are to be fitted with solid frames and segment heads, to agree in appearance with the other frames, and having oak sunk and weathered sills fitted with 2-inch moulded deal sashes as before; these sashes to be in 1 face, line and fitted in with 4 panels of cast-iron grill work, secured by screws; these grills are to be cast from patterns, properly prepared and approved of, and the castings are to be clean and perfect. The inside of the window frames is to have a cement fillet as before, on the jambs and soffit, and the sill is to have a splay lining the full width, with a rounded edge. The external openings at the bottom of the stairs of the Servants' and Officers' apartments, are to be fitted with proper doorcases, 4½ inches × 3 inches, rebated and beaded with segment heads of the same, and moulded transoms 4½ inches × 6 inches. The heads are to have long horns, and the heels are to be tenoned to the stone step. The insides of the frames are to have cement fillets as before, the doors to be 6 feet 6 inches × 3 feet 6 inches, 6 panel in 2¼-inch deal, bead flush and square, the panels in narrow widths, tongued and beaded as before; they are to be hung with three 5-inch wrought butts, fitted with strong 7-inch iron-rim locks, and two 10-inch barrel bolts each. The *fanlight* over the transom is to be in 2¼-inch deal, moulded and fitted with *zinc bars*, to be screwed into the solid frame.

The external doors leading from the towers to the privy yards are to have solid frames, with transoms, fillets and fanlights as already described above; the doors also to be the same, but hung top and bottom on properly prepared centres with gun metal, collars, cups, and steel points, and pins, having wide tail straps to clip the door. The top collar is to be secured to the transom, the lower point is to be let into the stone, while the lower cup is to be strapped to the lower end of the door; the pin and the cup are to be so prepared that the door will close itself either by means of an incline on the lower bearing, or a worm and thread on the upper one; these door frames are to be fitted with reverse rebates to suit this motion. The side door in the west tower is to be 6 feet 6 inches × 3 feet, 6 paneled out of 2½-inch deal to agree with that adjoining, which is described above; the frame is also to be of the same kind, hung with three 5-inch butts, and fitted with a 7-inch rim lock. The door is to be prepared to open outwardly if required; but if not so, the inside is to have a cement fillet as before. The two openings at the south ends of the arcades leading to the infirmary and chapel, are to have doors 7 feet 3 inches × 4 feet, 6 paneled out of 1¼-inch deal folding, each hung with three 5-inch butts; each door is to be fitted with one 12 inch and one 18-inch strong brass flush bolt, with sockets let in. The locks to be strong 7-inch iron rim, the frame to be out of 4 inches × 3 inches rebated and beaded with circular head and cement fillet, as already described. The entrance doors to both sides of the lobbies of the dining-hall, the doors of the several staircases to the Master's and Servants' apartments under the arcades, the doors to the Boys' library and play-rooms under arcades, and the door of the larder, are all to be the same as those described above, in every part, and fitted in the same manner.

The folding-doors of the studies that enter from the staircases are to be 7 feet 3 inches × 3 feet 7 inches, like those described above, hung and fitted in the same manner.

The internal doors of the several apartments and offices on both sides (10 in all) are to be 7 feet 3 inches × 3 feet 3 inches; they are to be of the same description as the preceding doors with frames, and to be hung and fitted in the same manner, the only difference being that they are to be single, not folding in those rooms; where the brickwork is finished, net cement fillets are to be applied in the same manner as already described.

The water-closets under the stairs of the north end of east and west buildings are to be circular headed, 7 feet 3 inches × 2 feet 6 inches, paneled like the others, only they are to be 2 inches thick, they are to be hung with 4-inch butts, and fitted with water-closet latches; the doorcase is to be out of 6 inches × 2½ inches, wrought on 3 sides, the parts above the doors being thinned to the size of the quarters of the surrounding partition, which are to be 4 inches × 2 inches; the external angle is to have a ¾-inch staff bead, the door-frame to have wrought stops, 2½ inch × ¾ inch. The spandril return of the doorway in the line of the string of the stairs is to be fitted with a piece of framing paneled, flush outside notches to the steps, and scribed to the soffit over the angle to have a staff bead. The seats of these closets are to be of 1-inch Honduras mahogany, the risers of the same; they are to have framed, rebated, and dovetailed bearers, the seat being fixed as shown; the risers to be returned and fitted with a staff bead. The flap is to be of 1¼-inch Honduras, framed, beaded, mitred, clamped, and fitted with tongued moulded nosing; the back and returns of the seat are to have a ½-inch Honduras skirting, 4½ inches wide, tongued to the framing, and fitted with an ovolo moulding. It is to have a narrow plaster ground; the seats of the risers are also to be fitted with narrow grounds, the whole to be set up with tongues, grooves, screws, and buttons, so as to be easily removable; the flap is to be hung with strong 3-inch brass butts; the handle-hole to be fitted with a mitred bead; the Plumber is to be attended in fixing these closets. A prepared *candle-shelf* and *paper-box* of Honduras are to be securely screwed to the wall in some convenient position; the angle by the window is to be fitted with a *wash-basin*, having a Honduras quadrant fronted fitting the basin, is to be 15 inches diameter, and the top 4 inches larger on the 3 front sides; the edge is to be moulded, and the back fitted with a skirting as above, the front is to be framed and beaded, having a hinged door and inside shelf; the whole to be provided with grounds for the plaster, and is to be fitted together as described above, the Plumber is to be attended in the fitting of these basins. The whole of these mahogany fittings are to be well grounded in and French polished.

The *book cupboards in the studies* are to have doors 7 feet 3 inches × 4 feet 3 inches of 2-inch deal, 6-paneled hung folding; they are to agree with those opposite, and hung with three 4-inch butts to each part, and the fixed doors are each to have two 6-inch necked bolts; they are to have also 6-inch dead locks. The framing posts, heads, and sills, are to be the same as those already described for the lobbies, and are to have filling-in pieces the same; the soffit covering is also to be the same as those for the lobbies, except that it is to have no flap. Each cupboard is to be fitted with 4 shelves of 1¼-inch deal, wrought both sides, and 22 inches wide, cut and pinned into the wall, and fitted with bearing fillets screwed to the side linings.

The *Boys' library* is to be fitted up on 3 sides with bookcases, the 2 ends being fitted with centres and wings; the front framing of these cases is to be formed of 2-inch deal, rebated and beaded to the doors. The doors are to be of 1½-inch deal, square framed, folding 3 panels on each door; the panels to agree with the other work, they are to be hung with 3-inch butts; and the fixed doors are to have one 12-inch and one 18-inch strong ⅞-inch brass flush bolts; the other doors are to have 4½-inch cut cupboard locks to pass. The top is to be fitted with a deal moulded and mitred cornice of 9 inches girth, covered with ¾-inch deal upon proper bracketed bearers. An astragal bead is to be carried under the cornice all round. These bookcases are to be raised upon a plinth of ¾-inch deal, 4½ inches wide, with torus moulded edge; the divisions are to be of 1-inch deal, wrought both sides, tongued and framed; the shelves are to be of 1¼-inch deal, these are to be 5 in a height; the top and bottom are to be of 1-inch deal, wrought one side; the divisions, ends, tops and bottoms, are to be dovetailed and pinned together, and tongued to the front framing; the sides are to have double rackets and cross fillets of ½-inch wainscot, and 1 inch wide, secured by screws to the sides and divisions, the ends of the shelves are to be notched to lay on the fillets; the part above the cornice is to have ¾-inch fascia with returns; the back is to be divided in 2 heights by a backrail of 1¼-inch, wrought on both sides, and screwed to the divisions, grooved for receiving the backings, which is to be formed of ¾-inch matched and beaded linings.

The *kitchen scullery dresser* is to be 10 feet long, and 2 feet 2 inches wide; the top is to be of 1½-inch white deal, with rounded corners; it is to be blocked and screwed down to a 1½-inch framed rim, with turned legs, 3 inches × 3 inches. The rim is to be prepared and fitted with 3 drawers, which are to have 1-inch fronts, ¾-inch sides, and bottoms dovetailed and blocked with iron drop handles; these are to have divisions of 1-inch deal, and 1½-inch runners. The pot-board is to be of 1-inch deal, with rounded edge, and is to have proper fascia and bearers. This dresser is to have three 1¼-inch sink shelves of diminished width, and 1¼-inch cut standard with fascia, and moulding returned round ends and front; the top is to have a cover of 1-inch deal, the back is to reach from the top to the floor, and rebated into the standards and cover, it is to be of ¾-inch matched and beaded in narrow widths. The *dresser* opposite the last is to be the same as the above, but is to be without drawers or pot-board, having in lieu thereof 3 bins for vegetables formed of 1¼-inch deal, with open fronts and notched divisions; the bottom is to slope forwards, and is to have proper bearers of 3-inch deal, the whole framed and grooved together. The *dresser* in the great kitchen is to be 12 feet long and 30 inches wide at the top, which is to be of 2-inch white deal, with a 1½-inch framed and dovetailed rim, and 6 turned legs 3½ inches × 3½ inches. There are to be 4 drawers fitted to the rim, which are to have divisions, runners, and handles as described above, the pot-board under, the shelves over, with their moulded fascia, cover, and backings, are to be like the others.

The *larder* is to have on the 1 side 3 *shelves* of 1¼-inch deal, 11 inches wide, wrought 2 sides, the ends are to be cut and pinned into the wall, and they are each to have 3 *cast-iron cantilevers*, 2 inches long, T shaped of ⅜-inch iron, and of the weight of 14lbs. with holes and screws. The other side of the larder is to have 2 meat-hook rails of 2½-inch deal, 6 inches wide, wrought all round with rounded edges; the ends are to be pinned into the wall, and fitted with 2½ dozen of tinned meat-hooks with screws; 1 cross rail like the above is to be carried across the end into which the others are to be framed.

The *kitchen store-room* is to have a *fitting* across the windows, with a top of 1½-inch white deal, 28 inches wide; the front and bearers are to be framed in 1½-inch deal for a length of 11 feet, the top being screwed round to the same, and its end pinned into the wall; the front is to be fitted with 4 drawers in the length, and 2 in the height, with 1-inch fronts, ¾-inch sides, and bottoms glued and blocked, and 2 iron drop handles to each; the bottom under the drawers is to be of 1-inch deal, with proper bearers. The top of this fitting is to have a skirting grooved to the top of 1¼-inch deal, 9 inches wide. The side next the door is to have a *fitting* 13 feet long, which is to contain a nest of 4 bins, which are to be 28 inches wide; the top to be of 1½-inch deal, part framed and fixed to the bearers and divisions, and part clamped and hinged with prepared hinges as flaps. The front is to be of 1½-inch deal, part framed and fixed, and part clamped and hung with prepared hinges as flaps, and fitted to the flaps in the top with slabs and plates. The joints of these flaps are to be fitted and grooved to prevent the entrance of water or dust; the divisions, ends, and bottoms, are to be of 1¼-inch deal dovetailed, and grooved together. The bottom is to slope towards the front, and is to be fitted with proper bearers; the height of the whole is to be 3 feet, and is to agree with that under the window. Over this fitting are to be placed 3 shelves 9 inches wide of 1¼-inch deal, having standards and divisions of 1½-inch deal, with 1-inch fascia, 4½ inches wide, with moulding over; the cover is to be of 1-inch deal, and the backing of ¾-inch matched and beaded as before described.

The end opposite the window, and the returns towards the fireplace, are to be *fitted with cupboards* to agree in height with the last-described fitting, having 1½-inch framed and beaded fronts, with square framed folding-doors, paneled, to agree with the doors of the rooms; each is to be hung with 3-inch butts; those fixed are to have 6-inch necked bolts, the others 4½-inch cut cupboard locks; the top is to have a moulding and cover like the other fitting. This top and the bottom are to be of 1-inch deal, the bottom to have bearers of 4 inches high; the divisions to be of 1¼-inch deal in the height, grooved to the divisions and ends; the outer angle to be staff beaded; the riser to be of 1-inch deal, the inside of the framing round the doors is to have stops of ½-inch deal, wrought and rounded, screwed to the framing.

The *Nurses' apartment and kitchen* are to be fitted with a 1½-inch deal cupboard, dresser, sink, and other conveniences shown on the plans.

The *house store-room* is to be fitted with deal shelving of various widths, the loose ends to be clamped and mitred; they are to have cast-iron cantilevers of 21lbs. weight, with holes and screws, the ends of the shelves and the cantilevers are to be cut for and pinned into the wall, the *sides to have* 3 dozen *tinned screw hooks.*

The *Undermaster's library* is to be fitted on two sides with bookcases in two heights, formed with a centre and wings to each; the sides are to be of 1¼-inch deal framed; the upper portions of the centre and the wings are to be of 10½ inches wide; the lower centre is to be 7 inches wider, the top fascia to be of 1¼-inch deal 9 inches wide; the plinth and the fascia under the table shelf are to be 4½-inches wide. The fronts are to have pilasters of 1½-inch deal 3 inches wide and 8 feet high to agree in height with the cases; these pilasters are to have plinths with moulding, mitred round, and the cap moulding is also to be mitred round their heads; the plinth is to have a moulding of inch width, the bed moulding under the table shelf is to be 3 inches girt, a moulded cornice 8 inches girt, is to be mitred round the pilasters. The cover of the top is to be ¾-inch deal with proper bearers; the lower side of the fascia is to have a soffit of ¾-inch deal with proper bearers. The lower part of the bookcase to be fitted with 4 shelves of 1¼-inch deal 10½ inches wide; the table shelf to be of 1¼-inch deal, and in the centre is to be 18 inches wide. 1 middle shelf of the above width is to be fitted to the cases under the table shelf, the bottom shelf is to be of 1-inch deal with proper bearings of 4 inches × 2 inches; the back is to be of ¾-inch deal, notched and beaded; the whole of the sides and divisions are to be dovetailed and pinned together; the shelves are to have wainscot ratches as described for the Boys' library.

Centre Building, North Front, had the fittings described of the same character as the preceding.

The *great central entrance gates* are to be prepared as shown, and folding; they are to be in yellow deal to furnish, 4 inches thick on the framing; both sides to be furnished alike; the lower parts are each to be in one panel, fitted with a large bolection moulding; the panels to be with raised margins and moulded on the edge of the field; the panel and lower rail under of the right-hand door is to be prepared as a wicket; the whole of the framing, &c., to be put together in two thicknesses of dry deal and set in white lead, with screws; these last are to have their heads let in and covered with deal. The top rail is to be carved and moulded as shown; the scroll ends being carved out of the solid; the meeting stiles to have splayed rebates, and the hanging stiles are to be bevelled to the frame; the meeting stiles are to be fitted with a large projecting moulding which is to be carried across the head and down the hanging stiles. All these mouldings are to be secured by screws, each gate and wicket is to have a keeping rim hoop of iron 3 inches × ⅛ inch, with solid angles let into the wood and well screwed. The wickets are to have a wrought-iron sill plate 4 inches × ¼ inch with return knees well screwed to the bottom and edges of the stiles with screws; this plate is to be rounded on the edges. At the gangway a strong pair of wrought-iron hinges with 6-inch knuckles and steel pins, the strap part is to cross the stiles of the two lower hinges to each door; the upper hinges are to go right across the whole door; the heels of the straps in all the hinges are to cross the return edges of the stile with a knee; these hinges are to be secured by shaped-headed screwbolts. The *wickets* are to be hung with similar strap hinges, having a 3-inch double-joint knuckle with steel pin, and screwed with shaped-headed screws; the wickets are to be fitted with strong extra *draw-back mortice locks* with 1 bolt and bronze knobs. Provide fastenings to the gates of the prime cost of 100*s*. without the fixing, the open parts of the gates to be fitted with wrought-iron twisted bars with ornamented points above the line of the top rail as shown; these last are to have a framed plate 3 inches × 1¼ inch, screwed by screws to the top rail; the wrought-iron ornamental scroll-work on the centre is to be secured to this plate, and otherwise retained in its upright position. Great care must be taken with the gates to secure them meeting properly on the meeting stiles without warp or twist; these gates are to have posts of fir 9 inches × 7 inches, wrought on two faces, rebated, bevelled, jointed, and staff-beaded; they are to be secured to the walls with 3 wrought-iron strap bolts, each 2 feet long, with nuts and screws, and properly caulked down into the templates; these bolts are each to have a bed stone 18 inches × 14 inches × 6 inches, with tooled outer edge, and the strap bolt is to be let in and beaded. A transom of fir 12 inches × 12 inches is to be framed into the head of the posts, wrought all round and fitted with mouldings of deal on the faces, and with a cast guilloche of Atkinson's cement fitted to the same and screwed by screws to both sides of the transom. These transoms are to be scribed in the moulding over the stone mouldings of the sides.

The *cellars* under the Head Master's and Steward's apartments are to have the inner enclosure fitted with ledged doors, 6 feet 6 inches × 2 feet of 1-inch deal, tongued together; the ledges and braces to be batten and half deal wide, well secured with nails and screws; they are to have doorcases of fir 4½ inches × 3 inches, wrought 3 sides, and fitted with stops, tenoned into a York sill, 9 inches × 4 inches and 3 feet long; the doors are to be hung with 18-inch cross garnets, and fitted with 8-inch *copper-warded good wine-cellar stock locks.*

The *large schoolroom* is to have its recesses fitted with oak sleepers, 4 inches × 3 inches, and joists, 6 inches × 2½ inches, which are to be 1 step above the general floor. They are to be covered with 1¼-inch yellow batten floors, laid straight, joint fitted on the edge, with a rounded nosing, the riser is to be of 1-inch deal; the centre recesses are to be fitted with cupboards having square-framed fronts of 1½-inch deal, 7 feet 6 inches high, beaded to the doors, which are to be bead, butt, and square folding, each hung with three 3-inch butts, with 5-inch necked barrel bolts, and 4½-inch cut cupboard locks in suits; the doors are to be fitted on the inside with mitred stops of ½-inch deal, the ends and divisions to be of 1¼-inch deal, 15 inches wide, wrought both sides, and cross-tongued shelves 1¼-inch deal, 15 inches wide, housed into the uprights; the top cover and the bottom shelf to be of 1-inch deal, the bottom fitted with cross bearers, and the top with a rounded nosing.

The *school dormers* are to have 1½-inch moulded sashes and deal cased frames as described for the dormers of the north front buildings fitted with approved fastenings, and inside cheeks of 1-inch deal, wrought one face; they are to be tongued to the frame, and fitted with a staff-bead. The window board is to be of 1¼-inch deal, with rounded nosing and returned ends; the ceiling is to be finished as before.

The upper part of the schoolroom is to have elliptical *windows* on both sides, having 2¼-inch deal sashes and zinc bases as before in 8 squares with deal frames, got out of 2 thicknesses, finishing 4½ inches × 3 inches, fitted with cut in and out beads; the casements are to be hung on centres, and having sets of lines, pulleys, and hooks, to open and shut the casements from the floor of the schoolroom; these casements are to have short copper tubes of about 12 inches long, let through the outside dressings, to take off the water from the bottom of the oval, the inside to have a reveal lining of Atkinson's cement, with arris edge. The *windows* *of the school* are to have 2-inch deal moulded sashes and deal cased frames as already described for the other portions of the ground-floor; they are to have proper fastenings, and are to be only single hung, the inside to have a cement fillet 2 inches wide, the window board to be of 1¼-inch deal fitted upon proper bearers, the nosing to be rounded with returned ends.

The *side recesses* on either side are to have square beaded sashes and frames with 16 squares each, constructed in the same manner, they are also to be single hung and fitted with proper fastenings; the inside to have a window board of 1¼-inch deal, and a cement fillet as above described.

The *entrance doors* to be of 2½-inch deal, 6 paneled folding, fitted with thick panels in narrow widths, beaded both sides, the head to be a segment; they are to be hung with 3 pairs of 5-inch butts, and fitted with one 42-inch, and one 12-inch wide flush bolt, the lower one having a socket let into the stone sill, and leaded; it is to have a strong 8-inch iron-rim lock, with brass knobs, each door to have a 6-inch wrought-iron cabin hook, with keeping plates, eyes, and screws, the frame to be of fir, 4 inches × 4 inches, framed, rebated, and beaded. The *lobby doors* are to be like those mentioned above, but fitted with *Try's patent double-action springs*, the edges of the doors being rounded from their several centres as necessary; the doorcase is to be 4 inches × 4 inches, with an oak sill of the same, also return head and sill of the same; the returns are to have proper grooves for the upright frames, heads and sill fitted in with 1¼-inch narrow battens, tongued and beaded; the soffit of the lobby to be formed of 1½-inch framing, filled in with narrow batten ledged flaps, hung with 18-inch cross garnets, fitted with lines, pulleys, hooks, and pins, the edge of the soffit to project all round, and is to be rounded.

The hall is to have dormer windows the same as the school, and also elliptical windows in the upper part of the wall, also deal-cased sashes and frames, with zinc bars as before for the lower windows, and also deal-cased sashes and frames as before for the side recesses of entrance on either side, all as previously described, and fitted in the same manner. The centre on the south side is to be fitted with an elliptical sash of the same kind as those already described, only larger to suit the present position; the interior having reveals of Atkinson's cement as before. The *centre opening* is to have a solid deal frame 4½ inches × 5 inches, in 4 compartments, the mullion and transom being 4½ inches × 5 inches, fitted with moulded zinc bars as before in 48 squares. The upper portions are to be fixed, the lower portions are to be fitted to open as folding casements, with double-hooked grooves and rebates, and proper brass weather bars to the sill, and weathering plates on the doors. The lower portions of these doors are to be fitted with moulded and raised panels on the outside, and bead flush inside; each door to be hung with three 4-inch butts, and 2 strong brass casement fastenings, also 2 wrought-iron stay hooks-and-eyes and plates; each door is also to have an upright mortice lock to pass; the meeting of the mullion and transom is to be fitted with a carved lion-faced patera, the inside reveals are to be rendered in Atkinson's cement. The *inner doors of the hall* are to be 2¼-inch 6 paneled square framed folding-doors, with thick panels in narrow matched and beaded battens; they are to be segment headed as shown; they are to have one 18-inch, and one 12-inch, wide flush bolt, the bottom one having a staple let in and beaded. The doorcases are to be 4½ inches × 3 inches, rebated and beaded, and fitted with a cement fillet on the outside as before.

The school cap lobbies are to have rails and pins in the same manner and of the same number as those mentioned above.

Fittings for the Berths.—An iron bedstead is to be provided *for each berth* of the same pattern as those now in use at Christ's Hospital, with deal bottoms in widths and turned beech wood ball feet fitted and pinned to the legs; they are to be painted in 4 oils, and numbered consecutively from 1 to 246 inclusive. A *chest of drawers of yellow pine deal*, the over-size being 3 feet × 2 feet 9 inches × 1 foot 6 inches, is to be provided for each berth, with ⅞-inch dovetailed case and framed runners. A wainscot edge moulding, tongued and mitred, is to be fitted to the top. A ¾-inch plinth, 3 inches high, with chamfered edge and proper blockings, is to be dovetailed round the bottom; the runners are to be 2 inches × 1 inch framed and grooved to the sides; the back is to be ¾-inch deal, framed in 2 panels, with flush panels rebated into the sides; the drawer fronts are to be ⅞-inch, the rims ¾-inch, the bottoms ¾-inch glued blocked, those of the wide drawers in 2 panels; the fronts are to be fitted with selected cast-iron sunk lifts as handles; the whole of the exterior is to be painted 4 oils, finished in an oak varnished colour, combed, and numbered from 1 to 246 inclusive. A *wash-stand* is to be provided for each berth, formed with a ⅞-inch top, with projecting rounded edge all round, with a proper splayed hole for the basin; a ¾-inch rim, 3 inches wide, dovetailed at the angles, with rounded edge and OG moulded ends, is to be fitted to the 3 sides of the top, into which it is to be tongued and grooved, wrought and framed legs, 2 inches × 2 inches, with chamfered edges, framed top rails, 4 inches wide, with deal glued blockings to the top; the lower part is to have a ¾-inch deal shelf, notched to the legs, and fitted all round with a projecting edge rounded; this is to be carried on framed rails, 2 inches × 1 inch; the bottoms of all the legs are to be rounded so as to remove all the arrises. The whole to be painted 4 oils and finished, combed in a varnished oil colour, and numbered from 1 to 246 inclusive. A *desk of yellow pine deal* is to be prepared and fitted *to each berth*, having a ⅞-inch mitred chamfered sloping top, with flat hanging rail, the whole to be rounded and to project all round; the flap is to be hung with a pair of good 3-inch brass butts, the legs to be framed and chamfered 2 inches × 2 inches, the rim to be ¾-inch framed, with a ¾-inch bottom notched to the legs, with projecting rounded edge, and glued and blocked cross-nails, 2½ inches × 1½ inch, framed to the legs with rounded top, the cross centre ones of oak are to be fitted at 6 inches from the ground; the bottoms of the legs are to be rounded as before; the tops of the desks are to have ¾-inch cut standards, 6 inches wide, with two ¾-inch shelves in the height let in with grooves to the standards; the standards are to be tenoned through to the top of the hanging stile. The whole of the outer surface of this desk is to be painted in 4 oils, combed in oil varnish colour, and numbered from 1 to 246 inclusive. Provide a *Windsor chair* of approved pattern to all the berths, and numbered from 1 to 246 inclusive; well oil and hard-rub the same.

Studies.—Those *in the school Quad* are to have raised platforms for the *Masters' desks* formed of sleepers of oak 4 inches × 3 inches, joists 6 inches × 2¼ inches, floor 1¼-inch yellow battens, the edge fitted with a rounded nosing, the ends being fitted with returned tongued and mitred nosings 3 inches wide, the riser to be of 1-inch deal, 6 inches wide, mitred at the angles, the top of the desk to be formed of 1-inch wainscot, cross-tongued, glued and blocked; the edge is to have a tongued nosing moulding mitred at the angles; the back and returned sides of the enclosure under are to be formed of 1¼-inch deal, square framed in 1 panel high. All the external angles are to be mitred, and the internal ones grooved; the framed rails for the drawers are to be 2 inches × 1 inch, the runners the same; the bottoms of the pedestals are to be of 1-inch deal, grooved to the sides, and with bearers 3 inches high, with glued blockings, the outside to have a plinth 3 inches × 1 inch; the wainscot tops to be fitted with glued blocks and screws; the drawer fronts are to be of 1-inch deal, the rims and bottoms ¾-inch fitted with strong brass drop handles. *Each study* is to be furnished with 2 *lines of circular benches* as shown, 10 inches wide, formed out of 1¼-inch wainscot, the edges being rounded, and the headings tongued or lapped; 20 cast-iron leg standards are to be fitted to each pair of these circular seats in open castings, with top and bottom flanges, and screws to the seat and floor; the wall ends are to be fitted with 1¼-inch cut deal standards, having framed foot of 2-inch deal; these standards are to be well secured to the iron standards, are to have blocks of oak, each 15 inches × 6 inches × 4 inches, wrought and diminished, set in the concrete and cement floor. The *Pupils' desks* are to have seats of 1¼-inch wainscot, 8 inches wide, rounded edge and tongued headings, the low ends are to be round cornered, they are to have 60 cast-iron set standards like the last fitted to these benches, with oak blocks in a similar manner; they are to have a running bearer under the centre of the seat, and screwed at the ends to the cast-iron standards, glued and blocked to the top. The *circular seats* are to be fitted with *straight bearers* in the same manner, 4½ inches × 1½ inch; the desk tops and slopes are to be of 1-inch wainscot, the edges to be rounded and the joints cross-tongued and blocked with glue and screws; the bottom is to be of 1-inch wainscot in the same manner; the back to be of ⅝-inch wainscot, the divisions of the same, their front being out of an OG cutting, rounded on the edge; the external angle is to be mitred; these desks are to have open cast-iron standards with top and bottom flanges, and 4 countersunk holes and screws to each flange; 150 blocks of oak, 7 feet 6 inches long, 6 inches × 4 inches, are to be prepared, wrought 3 sides and diminished to set in the concrete floor.

The *play-room* on the west side of the school quad is to have a 1¼-inch deal seat, 15 inches wide, fixed all round the wall, the edge being rounded and the heading joints tongued; the angles are to be mitred and tongued; a 1¼-inch deal rail, 4½ inches wide, is to be fixed under the seat; this seat is to be fitted with 27 standards out of 1½-inch deal, with cut fronts, and framed into feet 3 inches × 2 inches, 16 inches long, let and pinned into the wall behind.

Large Schoolroom Fittings.—The *Masters' desks* are to be as those in the other studies.

The *side desks and benches* are to be raised on stepped platforms of 1¼-inch floor battens, the edge having a rounded nosing, having return nosings at the end 3½ inches wide, which are to be mitred into the other boards; the riser is to be of 1-inch deal batten wide; the joists are to be 6 inches × 2 inches, and are to have their ends pinned into the wall; the *seats* are to be of 1¼-inch wainscot, 10 inches wide, as before; the ends of the seats are to be rounded on plan and edge; the *standards* are to be out of 1¼-inch deal, 2 sides framed with feet and cut on the face; the face is to be 3 inches × 2 inches; there are to be 132 standards in all, notched back into the nosing and against the riser, and screwed to the floor; the *back seats* are to be continued through to the wall at the ends with 9 additional wall standards, as above; the pupils' desks are to be of the same kind as those described in the studies, formed of the same material and fitted in the same manner; the *front row* of these desks and benches are to be fitted with oak blocks, 3 feet 3 inches long, 6 inches × 4 inches, wrought and diminished as before described for setting in the concrete and cement floor.

The *dining-hall* is to have 6 *tables* fitted to its area, having 2¼-inch wainscot-tops, each top 29 feet long × 28 inches wide, cross-tongued at both heading and long joints, the heading joints being forked; they are each to be fitted with 7 wrought-iron ½-inch bolts, with double nuts and washers; they are to be fixed through the tops at proper distances, the nuts being let in and covered with flush wainscot plugs; the edges of the tables are to have their corners rounded, also the angles; the top is to be framed to a frame 2¾ inches × 2¼ inches, wainscot wrought all round and having 5 cross-bearers in the length, the top to be secured to the frame with wainscot buttons and screws; the framed legs are to be 4 to a table, with tops of 4¼ inches × 3¼ inches, wrought all round and framed with cut and moulded ends, the edges being slightly rounded; they are to be secured to the frame with 4 strong 3-inch screws, let in and plugged with wainscot. The leg standards are to be of 9¼ inches × 3¼ inches, wainscot wrought and framed, the edges being stop chamfered with splayed stops; the lower feet of these tables are to be out of 6¼ inches × 4¼ inches, wainscot wrought all round and framed, with cut moulded ends; the under side is to be cut out, the edges being slightly rounded between; the legs are to be fitted with a runner of 3¼ inches × 2¼ inches, wrought 3 sides and framed, the top edge to be flat rounded; the middle joints are to be fitted with 9-inch joint screws, and the ends with 9-inch bed screws, the whole of the nuts and heads being let in and plugged with wainscot.

The *benches* are to have tops of 1¼-inch wainscot, 10 inches wide, having rounded edges and corners; the framed rims are to be of 2½ inches × 1 inch, wrought 3 sides, 1 edge being bevelled, the whole framed to the legs; each bench is to have 4 cross bearers, 2½ inches × 1 inch, the ends bevelled and dovetailed to the rails; the tops of the benches are to be buttoned to the rims with stout wainscot buttons and screws. The legs are to be 6 to a bench, out of 2 inches × 2 inches, wrought, framed, and turned; they are to be framed to splay, having cross rails in wainscot out of 2 inches × 2 inches, wrought and framed, bevelled to the legs; long runners, 2 inches × 2 inches, are to be framed between the legs, wrought all round with flat rounded top; the centre joints are to have joint screws 6 inches long, and the ends 4-inch bed screws, the heads, &c. being let in and plugged.

The *reading-desk*, for which the sum of 15*l.* is provided, is to be of wainscot.

The *whole of these wainscot fittings* are to be *well oiled* and *hard-rubbed* in all the parts seen.

The *kitchen* is to have a *centre table* having a top of 9 feet × 4 feet 6 inches out of 4-inch elm, cross-tongued with wainscot or iron; the top is to have 4 bolts of ⅝-inch round iron, with double nuts and washers let in and plugged; the edges and corners of the table are to be slightly rounded, the rim to be 9 inches × 3 inches, inch yellow deal wrought and framed with 2 cross bearers in the length; the top is to be buttoned down with strong wainscot buttons and screws; 6 strong fir legs 4 inches × 4 inches, wrought, framed, and turned, are to be framed to the rim; these are to be fitted with wainscot rails out of 3 inches × 2 inches, wrought and slightly rounded, are to be framed to the lower part of the legs.

Servants' Hall is to have *a table* having top of 2½-inch white deal, 15 feet × 5 feet 9 inches; the top to be cross-tongued and the heading joints forked; the edges and corners are to be slightly rounded, the rim to be 9 inches × 1½ inch, wrought and framed to the legs; the centre of the table is to be fitted with 1 cross bearer of the same, the top to be buttoned down with wainscot buttons and strong screws; 6 deal legs, 3½ inches × 3½ inches, framed and turned, are to be fitted to the rim; wainscot rails, 3 inches × 2 inches, wrought all round, are to be framed to the lower part of the legs. The *benches* are to have 1¼-inch deal top 10 inches wide, with rounded edges and ends; the rims are to be of 2½-inch × 1-inch deal, wrought all round, bevelled 1 edge, and framed bevelled to the legs; 4 cross rails are to be fitted and bevelled, dovetailed to the rims; the top is to be bevelled to the rims with wainscot buttons and stout screws; 6 deal legs out of 2 inches × 2 inches, wrought all round, framed, bevelled, and turned, with cross rails 2 inches × 2 inches, framed, bevelled to the legs; and middle rail 2 inches × 2 inches, framed into the same, fitted with 6-inch joint screws and 4-inch bed screws.

The *Boys' privies* are to have frames for the doors of 4½ inches × 2½ inches, with continuous head of the same and a continuous sill of oak 4½ inches × 3 inches, the whole being framed and beaded; the stops are to be nailed on, the doors to be 1 inch, proper ledged, and kept 4 inches short of the opening for ventilation; hung with 18-inch cross garnets, the lower one being prepared with a crank o throw out of the centre so as to secure the self-closing of the door; the inside of the door is to have a 4-inch round bolt; the seats are to be of 1¼-inch elm in one width, cut and pinned into the back wall and built into the division walls; they are to have proper holes cut and rounded, and rounded edges.

The *Servants' waterclosets* on the east side are to have proper wrought and beaded doorcases 4½ inches × 2½ inches, with oak sill 4¼ inches × 3 inches, framed and built into the wall, having proper ledged doors of 1-inch deal kept 4 inches short of the opening; the stops are to be nailed on the doors to be hung with 18-inch cross garnets, the lower one being cranked as before, and a stout bolt fitted inside; the seat and riser to be of 1¼-inch deal, properly prepared with proper bearers so as to be easily removable; the flap and frame are to be of 1¼-inch deal-framed and mitred clamped, the flap being hung with strong 3-inch butts, the seat to have a proper rounded hole, the top of the seat to have a skirting of ¾-inch deal 4½ inches wide. The doors in the enclosing walls of these several yards are to have proper doorcases 4½ inches × 3 inches, with segment heads, wrought and beaded, tenoned to the York sill; the doors are to be 1½-inch bead, butt and square segment headed, hung with a strong pair of 4-inch rising butts, and 1 strong iron set-off handle on the inside.

The *entrance gates to kitchen-yard* are to be 3-inch framed folding, each flap in 9 panels, bead, flush, and square, the back being diagonal braced, the top of the stile to be fitted with a small quadrant sweep to the top rail. They are to have pairs of prepared strap hinges 3 feet 6 inches long, 3 inches wide, with heels to clip the stiles, and strong coach-screw bolts; the hooks are to have long double caulked tails let in and beaded to the stone; the lower parts of the gates are to have strap hinges as above, with gun-metal cup in the heel of the hinge; a box and steel pin being let into the stone for the same to work upon. The meeting of the gate is to be fitted with a stout cast-iron fall-down gate stop, which is to be let in and beaded to the stone sill; the centre of the gate is to have a prepared swivel bar fastening 4 feet long, 2½ inches × ½ inch, having a hinged hasp with chest-lock let into the gate; also with 2 properly prepared strong strap clips for the ends. A bolt of ¾-inch round iron, 2 feet long, with hole into the iron stop, is to be fixed to the closed gate; this bolt is to have a flap-strap handle to turn into the rebate, where it is to be protected by iron plates on each side, so as to render it impossible to be opened while the gates are closed; the top of the gates is to be fitted with a moulded capping 6 inches × 3 inches, grooved on to the top of the rail; these flaps are to have strong wrought-iron balance catches in cast-iron; standards are to be let into prepared stones and leaded to keep the gates open, the catch parts being protected by an iron plate.

The *side door* is to have a proper doorcase 4½ inches × 3½ inches, segment headed, tenoned to the stone sill, the door to be two 6 paneled bead flush, and square segment headed, hung with three 5-inch butts and a 6-inch dead mortice lock, a strong thumb latch, and two 9-inch barrel bolts.

PLUMBER.

All the *lead* is to be *milled,* and in all cases to stand the gauged weight.

All the dressing is to be done in a superior manner, and all weltings, rolls, and angles clearly bossed up out of the solid, and where solder is absolutely necessary to be used, it is to show as little as possible. In all cases the turns up, whether under slates or brickwork, are to be to the full extent specified; all flashings, &c. turned into brickwork are to be wedged with lead every foot in length, and all copper-nailing not to exceed 1 inch apart.

All the *copper work* used is to be executed in the best and most perfect manner, whether in balls or mouldings.

Roofs of Towers.—The *ball* on the top of the tower is to be 1 foot 9 inches diameter, formed of strong copper; the nut for securing the ball to the rod is to be soldered to the interior top of the ball, the rod to be of 1-inch round iron, 6 feet 6 inches long, passed through the woodwork of the upper roof, fitted with a collar to the point of this roof, and with nut, washer, and cross plate. Before fixing, these rods, &c. are to be painted twice, the ball to be double gilt with pure gold. The *base of the ball* is to be fitted with small cast-iron trusses, 10 inches × 4 inches × 1 inch, with raised scrolled ears, fitted with holes and screws to the wood top, and tapped screws to the centre rod. These are to be painted 4 times. The *top moulding* is to be covered with 7-lb. lead, having tube cover to the centre rod soldered to its top; the angles are to be dressed out of the solid, and the moulding to be well dressed under. The *curved top of the lantern* is to be covered with 6-lb. lead, well dressed to the boarding; the top is to be close nailed to the edge under the moulding of the top, and the angles are to be drawn together so as to form a raised tongue for the hip roll to be set on; the dropping eaves are to be dotted down in 2 places of a side; the hip rolls are to be screwed to the angles, and the lead is to be carefully dressed over them; they are to have their top point well dressed up under the moulding, and the lower end is to be bossed up square; the side margins of the rolls are to be ¾-inch from the under cutting. The flat of the lantern is to be covered with 6-lb. lead, and is to be dressed as weathering from the centre; the angle posts are to have flat sinkings, 1 inch wide, to receive the thickness of the lead, which is to be close nailed all round and bedded in red lead; the angle outside the posts is to be soldered, the eaves are to come over the round of the moulding half way, and closely dressed in. The outside of the posts are to have aprons of 7-lb. lead close nailed to the posts as before.

The moulding to the top of the *bell-tower* is to be covered with 6-lb. lead, close nailed to the upper edge, well dressed round the moulding, and the angles are to be soldered. The *upper square of the bell-tower* is to be covered with 6-lb. lead, close nailed at the top, and dotted to the eaves over the cornice; the sheets under the several hip rolls are to be drawn together so as to form a tongue for the roll to sit on; the tops of the rolls are to be flat, dressed under the upper lead, and the points of the rolls are to be square, bossed up out of the solid; the angle hips are to be covered in the manner mentioned above.

The *slope of the dormers* is to be covered with 6-lb. lead; the 2 sides are to be turned into a groove sunk on 1 side, 3 inches from the ridge, well dressed down and soldered flush; the eaves over the cornice are to be dotted; the projecting parts under the wing balls are to be part of the same sheets as the rest of the slopes; the slopes are to be turned up under the lead of the bell 4 inches, and to be nailed. The cover of the cross cornice is to be covered with 6-lb. lead, close tailed on the inside, and dotted to the outside. The *cheeks of the dormers* are to be covered with 6-lb. lead; they are to be close nailed to the top; the outer ridge is to be close nailed, and the bottom is to be turned 4 inches on to the slopes; the sill of the dormers is to be fitted with an apron of 6-lb. lead, which is to be let into a groove in the wood sill, and close nailed. The *kerb part of the tower roof* is to be covered with 6-lb. lead, in the same manner as the part above; the top part is to be carried 3 inches behind the cornice, and is to be close nailed. The whole is to be well dressed, and the rolls are to be dressed in the same manner as those above, and the eaves are to be dotted 16 dots to a side; the surface of the kerbs is to be turned up against the cheeks of the dormers at least 1½ inch, and against the angle flues not less than 4 inches; it is to be properly bossed and dressed to the back gutters of the flues. A flashing of 6-lb. lead is to be dressed into the flues, the average width being 12 inches.

The Dormitory Roofs.—The *backs of the towers* are to be fitted with 7-lb. lead covering to the gutters, which are to average 39 inches wide, including the turning up against the tower and under the slates; the ends are to be carried out clear of the tower, and the lower side tenoned down over the slates. The flashing to the gutter is to be in 5-lb. lead and 14 inches wide, let into the brick work, wedged and pointed. The slope sides of the tower are to have *step flashings* of 5-lb. lead, let in, wedged, and pointed as above. The windows in the side of the tower next the roof are to have a prop piece of 6-lb. lead, and 12 inches wide, dressed up under the sill; the ridges and hips are to have 6-lb. lead, 27 inches wide; they are to be well dressed round the rolls, the several parts being bitted with cut overlays, and straps of the same are to be nailed to the boarding and turned over the edge of the ridges or hips; the points of the hips are to be well bossed up square. The points of the junction of the hips with the ridges are to be fitted with *large balls of strong copper*, 33 inches in diameter, the interior of which is to be fitted with a nut soldered in; the rod is to be of inch iron, 6 feet long, fitted as before described with all nuts, screws, and plates; the square die and necking of the ball is to be formed of deal mitred together of 3-inch and 2-inch thickness, with angle pieces of 3 inches × 3 inches, carried down to secure them to the roofs; the mouldings are to be got out of deal; the whole of the top and sides are to be covered with 6-lb. lead; the *top moulding* is to be covered, and the centre fitted with a pipe round the centre rod; the several top angles are to be well drawn together and neatly soldered; the edge over the moulding is to have a dot on each side; the lower face covering is to come up behind the deal moulding, the top being close nailed; the panels on the face are to be formed of ½-inch piping, 1 inch in diameter, soldered to the face of the die. The angle ornaments are to be formed of cast-iron double scroll brackets, with twisted ears; they are to be 14 inches high, 8 inches projection, and 2½ inches thick, fitted with all necessary countersunk holes, and beaded with red-lead cement; the cover of the sides is to dress down over the slates over the several sides of the roof.

The *apron under slates* over the cornice to the kerb roof is to be of 5-lb. lead and 9 inches wide; it is to have proper laps to be well nailed to the boarding, and to project ¼ inch beyond the moulding. The apron under this cornice is to be of 6-lb. lead, close-nailed to the cornice bed, and 9 inches wide; it is to have 6-inch laps, the edges being cut into each other.

The *top slopes of the dormers* are to be covered with 6-lb. lead; they are to meet on one side of the ridge and be soldered into a groove, as already described; they are to turn back upon the roof slopes and over the tilting fillet, so as to form a valley; the eaves are to be dotted as before. The projecting standing places for the balls over the return pilasters are to form part of the cover of the slopes; the top of the horizontal cornice is to be covered with 6-lb. lead, close nailed to the back, and each having 3 dots to the fronts. The cheeks are to be of 6-lb. lead, returned on the front under the architrave, and close nailed; they are to be close nailed to the top; the cheek is to be returned on the slope of the roof for a width of 13 inches. These cheeks are each to have 2 dots to support their width; the apron under the sill is to be of 6-lb. lead, 18 inches wide, close nailed to a groove in the sill and the boarding. The *covering and bed of oval dormers* are to be in 6-lb. lead; the bed cover, well dressed over the slates below, and under the slates in the upper part, being bossed up round the kerb of the window. The oval kerb is to be well dressed over the bossed-up lead of the bed, with laps in the centre of the upright, the lower one being well nailed. The bed and oval cover are to be soldered together. The edge of the oval covering is to be bossed down over the edge under the face rim, which is to be bedded with red-lead cement.

The *lower hips* are to be covered with 6-lb. lead, like those above, and are to turn up not less than 4 inches against the chimneys; it is to be well dressed to the narrow gutters behind, the points of the hips are to be well covered with lead, which is to be dressed all over the deal hip-points, and turned up on the under side; it is to be bossed up square on the lower end, and turned into the brickwork at the upper end; the backs and sides of these chimneys are to be fitted with flashing in 5-lb. lead, wedged and pointed.

The *gutters* behind the several detached stacks are to be laid with 7-lb. lead, with flashings of 5lbs., fitted all round, wedged and pointed. The *gutters in the cornice* are to be lined with 7-lb. lead, fitted with all drips shown; cesspools are to be formed to each of the down pipes: these are to be the square of the gutter, and bottomed on the soffit of the gutter; the angles are to be soldered, and the bottom fitted with trumpet-mouthed nozzles to the down pipes, into which they are to be inserted; the tops of these nozzle pipes are to be fitted with a half-spherical grating of copper wire, surface equal to 17 inches × 7 inches; these cesspools are to be lined with 8-lb. lead; the sides of the gutter are to be well dressed up, the outer edge being well dressed over the outer slope of the top moulding, to which it is to be secured with 464 soldered dots; the external angle of this side of the gutter is to be soldered; the internal side of the gutter is to be dressed up under the slates as shown, and securely nailed; the several drips are to be well dressed up and fitted with all the necessary rebates and nails; the side next the several stacks of chimneys is to be well dressed up against the brickwork, and the internal angles, where cut, are to be soldered; the several ends next the towers are to have flashings of 5-lb. lead as before.

CENTRE BUILDING, NORTH FRONT.

The *clock turret* is to have a properly prepared *copper vane* to stand 5 feet high above the pine; the vane is to be moulded as shown, and the top of the tube is to be fitted with a *cup of ground crystal*, in a flat spherical dishing, properly secured at such height in the tube as will give the easiest motion; the upper part is to play freely over the lower; this last is to be fitted with the *cardinal points*, properly made for adjusting, the whole being moulded and shaped as shown. The *pine*, with its moulded base, is to stand 27 inches high, the greatest diameter being 18 inches; the whole well worked up in an effective manner to suit the height; the whole of the pine, with the vane and points over, are to be *gilt* with the best gold. The *rod* for the above is to be 12 feet long; the top point steeled, and slightly rounded and hardened, the point being burnished so as easily to turn the vane; the diameter of the rod is to be such as will suit the weight it has to sustain; the point of the rod which is clear of the top woodwork is to be fitted with a proper collar and washer, and the lower end with a nut, plate, and washer. The upper moulding, under the pine, is to be covered with 6-lb. lead, the angles of which are to be bossed up; a short pipe is to be soldered round the rod to weather it.

The whole of the *bell of the dome* is to be covered with 6-lb. lead, the angles of the upper members being closely dressed up and soldered to a square arris. The upper edges are to be nailed to the boarding. The hips of the round part are to be bossed up, to gather into a tongue for receiving the hip roll, which are to be covered with 6-lb. lead and well dressed over, the edges being cut to a margin; the top is to be secured to the boarding, and the bottom bossed up square. The *circular openings* on the dome are to have the lead dressed over their deal kerb, and turned over the face, which is to be fitted with a cast moulding 1½ inch wide, and fitted on the top with ball, at breast 2 inches in diameter, the whole being securely soldered and made good to the lead of the dome; the cover of the circular opening is to be soldered to the cover of the bell. The gusset pieces to the top of cornice angles are to be soldered together on the angles; the lead at the edge of the cornice is to be secured with 4 dots of a side.

The *pediments over the clock faces* are to be covered with 7-lb. lead, turned up 5 inches and let in flush, beaded in red lead and copper nailed.

The flat of the north buildings is to be covered with 7-lb. lead.

The apron of the flat is to be of 6-lb. lead, dressed upon the eaves moulding and well nailed.

The dormers are to be covered with 6-lb. lead; the slopes with their soldered joints and their dots are to be the same as those already described for those of the upper roof.

The pediment over the gateway is to be covered with 7-lb. lead.

The eaves-gutter on the cornice is to be covered with 7-lb. lead having 8-lb. cesspools and shoots.

The Hall lantern is to be topped by a copper pine, with a moulded base 21 inches high and 12 inches in diameter at the widest part.

The gutters of the Hall and School are to be lined with 7-lb. lead with 8-lb. cesspools, the whole fitted up in the same manner as has been already described for the upper gutters.

The *Roofs of the Wing Buildings, North Front.*—The flat is to be covered with 6-lb. lead, as also the roofs of the low wings of the School and Hall.

The Kitchens of the north front are to have their flats covered with 7-lb. lead, and the interior flat of the Belfry in the Tower is to be of 7-lb. lead.

The detached offices, the coal-sheds, engine and boiler house are to have ridges, hips, and valley of 6-lb. lead, with all proper cutlaps, clips, and nails.

The open recess over the entrance gateway is to have its floor laid with 7-lb. lead.

The *Water-closets.*—The water-closets in the apartments of the Head Master and Steward, and those for the water-closets under the staircases of the north, and of arcades, are to be best blue-basined pan apparatus, with large receivers, with handles, balance, and lever, with inch high-pressure cock adapted to join on with wrought-iron pipes; these apparatus are to be fitted with D traps, each having 4 feet run of 5-inch funnel pipes made out of strong lead. They are to have bends to turn down into the iron pipes, into which they are to be cemented air tight. The other 4 apparatus on the mezzanine floor are to be like these last in every respect, except in the colour of the basins, which are to be white. The *Boys' night-closets* on each staircase are to be fitted with *self-acting apparatus*, having a cast-iron enamelled hopper and syphon trap, each having 4 feet length of cast-iron pipe, with a junction to receive the syphon. The several sockets are to be set with iron cement so as to be air tight; the long pipe is to be laid with a fall towards the down pipes, and each socket joint is to be fitted with cast-iron standards, which are to be placed on the stone-floor landings. These hoppers are to have the water laid on through an inch way cock, fitted to resist high pressure. A quadrant pier of 5-inch iron pipe, and about 2 feet long, is to be placed at the end of the laying pipes to convey them into the down pipes. Each set of closets is to be fitted with a length of 6-inch vertical pipe 3 feet high, having 2 OG junctions, 1 on each side, about 2 feet long, cast with sockets to receive the down pipe from above, and from the double sets of closets.

The *wardrobes to the dormitories*, and the closets on the mezzanine floor, are to be fitted with *sinks of cast iron* in ½-inch metal, each 36 inches × 20 inches × 12 inches deep. All the corners and angles are to be rounded, and they are each to have a short discharging socket, with countersunk holes, to attach to the pipe beneath; also a stout brass grating of 4 inches diameter, fixed with tapped screws to a rebate in the bottom of the sink. Each of these sinks is to be fitted with a dip pipe of 1 foot 9 inches long, and 3 inches in diameter; the upper surface of the pipe to be fitted with a flange, which is to be turned to fit the bottom of the sink, and to be tapped to receive the screws mentioned above. The bottom of this pipe is to dip into a box trap 15 inches × 9 inches and 6 inches depth, with cross dip and short 3-inch pipe outlet; the portion of the lid of this trap next the down pipe is to be securely fastened down so as to be air tight; the other portion is to be hinged for clearing out. These sinks are to be *carried upon cast-iron cantilevers*, 2 feet 10 inches long, 3 inches wide, with turn-up clip at end and a bearing flange below, of 14 inches × 3 inches; the bearing web is to be 3 inches deep. These are to be pinned into the wall, and fitted with York templates 9 inches × 2½ inches, tooled on the faces and edge. Patterns are to be provided for the casting of the above. One short piece of 3-inch pipe 3 feet 6 inches long, with socket, is to convey the water from the trap to the dip quadrant, which is to take it into the down pipe. The upright pipe from the wardrobes is to be 3-inch pipe; those from the other 4 sinks are to be inch. They are each to be about 3 feet long, and are to be fitted with a junction fitted to the quadrants from the sinks; the down pipes from the wardrobes to the level of the Boys' closets are to be of 3-inch pipes; they are then to join into a 6-inch down pipe by two OG branches 2 feet long, fitted with sockets; the further extensions of these pipes to the drains are to be of 6-inch socket pipes.

The water-closets in the mezzanine are to have each a piece of 4-inch socket pipe, 4 feet long, from water-closet trap, with air-tight junction to the lead trap; these are to be fitted with quadrant pieces of 4-inch pipes, about 2 feet long, with sockets to join the down pipes. The stand pipes from these last down to the drains are to be of 4-inch socket pipes. The water-closets from the mezzanine in the north-front building are to have standard pipes of 4-inch socket pipes in the same manner as the above.

The *wash-hand basins* in the water-closet under the staircase to the Visitors' and Committee rooms are to be in blue ware, 15 inches in diameter, with washer, plug and chain.

The *Servants' water-closet* in the kitchen-yard, and attached to the low buildings of the north front, are to be self-acting *Botten's patent* cast-iron hoppers, as described for the Boys' night water-closet in the tower.

Water Supply.—The water is to be placed in the cisterns at the top of the towers by the Contractor for the supply of the cisterns and wells.

The *whole of the pipes* used are to be *wrought-iron* welded pipes of the best manufacture; all the screws and nuts are to be perfect, threaded in all their length; all the bends, T's, and junctions are to be perfect and hot turned; all the cocks are to be full way, and are to be of *Lambert's* patent for high-pressure supply; and the whole of the pipes are to be tested previous to their being covered up.

The water is to be taken from the cisterns to the mezzanine floor by a 1¼-inch service, with proper connexion to the cast-iron cistern bottom, and all requisite bends, nuts, and holdfasts. The bottom of this pipe is to be stopped. Junctions are to be made to the upper sinks in the wardrobes with ¾-inch branches. They are to have ¾-inch *bib-cocks* over the sinks. Branches are to be laid on to the water-closets on the mezzanine, with inch pipes. These are to be fitted with short ¾-inch branches of junction to the apparatus of the several closets, the further end of the inch-pipe being stopped. A stop-cock, Lambert's patent, is to be fixed on the 1¼-inch pipe shortly after it leaves the cistern, to give the power of stopping the pipe supply in case of leakage.

The water is to be taken from the *well rising main* below the level of the ground by means of 2-inch wrought-iron pipes, having proper junctions therewith; these are to be carried right and left of each tower for general supply, and at their further limit fitted with stopped ends; each several branch is to be fitted with a stop-cock on the 2-inch pipe close to its exit from the 3-inch main.

The branches from the 2-inch main to the water-closet on the mezzanine of the south ends of both wings, are to be of ¾-inch pipe, with T junctions, having proper bends where they rise to the upright, and a sloped end at their further limit; short branches are to be taken to the water-closet apparatus, and also to the sinks, which are to have ¾-inch Lambert's bibs; these several branches are to be fitted with stop-cocks to their point of departure from the 2-inch main. The kitchen and scullery are to be fitted with branches of inch pipe, with proper T junctions, bends, and stopped ends; an inch stop-cock is to be fitted to each branch where it leaves the 2-inch main; an inch branch is to be continued to the steamers on the north side of the kitchen; the sinks are to have inch bib-cocks, and the steamers are to have each a ¾-inch bib fitted to them upon short ¾-inch branches. An inch branch is to be taken from the 2-inch main at the south end of the west building to the sink in kitchen; it is to be fitted with stop-cock T's and bends as before; the sink is to have a ¾-inch bib-cock on a short branch.

The water is to be laid on to the Servants' water-closets behind the tower and to all the parts in the manner already described.

A branch of ¾-inch pipe is to be laid on to the boiler to the *Nurses' kitchen range*, with T's, bends, stopped ends, and a 1½-inch ball-cock to ball to the upper cistern.

SMITH AND FOUNDER.

executed, the ornamental portions being equally executed, and draw-back moulded, and the several girders and bearers are to be perfect and sound castings. The *iron bolts, straps, shoes, and other fittings* to the Carpenter's and Joiner's work, are to be carefully executed, and fitted with all the necessary holes and counter-sunk holes, with all tapped and other screws required for their several purposes. The *iron balusters* and railings, &c., are to be executed in the best manner, with perfect joints, bearings, rivetings, and beadings, suited to their several purposes and positions. The *down pipes* for rain and foul water, with all the pipes for the water supply, are to be provided as described in connexion with the Plumber; all the socket pipes are to be fully set in iron cement, and all the wrought-iron pipes are to be well screwed up.

Proper *patterns* are to be provided for all the several cast-work pieces; all the ironwork of whatever kind is to be painted twice with good red-lead colour previous to fixing. All the bearings of cast girders, cantilevers, &c., are to have a bed of asphalted felt laid under their bearings and on the stone templates.

A double set of *cast girders* is to be fitted to the cross wall of the towers where carried across the staircase, the depth is to be 12 inches of web, and the flanges 6 inches in 1-inch metal, the angles being strengthened; the bearings are to be widened 3 inches, these are to have 6-inch tooled York templates to their several bearings, and are to have dowels of 1-inch square wrought iron 3 inches long, let in and leaded to each bearing of the girder. Bearers of cast iron 5 feet long, with 23-inch bottom and 9-inch web, all of inch metal; the angles being fitted in are to be fitted to receive the bearings of the foregoing girders on the side walls where the ventilation flues are, these are to have 6-inch York templates with iron dowels as before. No. 11 *cast-iron* T *bearers,* 8 feet 4 inches long, are to be fitted to carry the walls over the arcade, the depth is to be 9 inches, the width of the top flange 9 inches, the angles filled in, and each fitted to brackets; a bearer of 14 inches × 9 inches is to be fitted to the ends of these girders having 3-inch York templates, and 3-inch iron dowels as before. No. 14 *cast-iron bearers,* 9 feet long, average width of inch metal 21 inches, are to be provided to carry the wall of the towers, and cover the corridor; their bearings are to be increased by 4½ inches, and are to have 6-inch York templates with iron dowels. No. 2 *cast-iron bearers* in 1¼-inch metal, 12 inches deep and 9 feet long, with flanges equal to 13 inches of inch metal, fitted for a length of 6 feet 4 inches, with a moulding 4 inches × 2½ inches; these bearers are to have increased wall bearings equal to a width of 12 inches, they are to have 6-inch York templates and iron dowels, as have been already described. No. 8 *cast-iron bearers,* 7 feet 10 inches long, average iron 12 inches, with web top flange, fitted in angles, and lower 2½ inches × 2½ inches moulding, having widened bearings, averaging 5¼ inches, with stays to the same, fitted with 3-inch York tooled templates and iron dowels as before, are to be prepared for bearing the landings to the staircase in the mezzanine floor. No. 68 *cast-iron bearers,* 11 feet 1 inch long, of the same general description as the foregoing, are to be prepared and fitted to the landings of the Tower staircases.

All the bearing girders under the brick walls are to be covered with 3-inch York tooled edged bearings to receive the brickwork.

The *staircases* to the Visitors' and Committee rooms are to be fitted with *iron railing* of inch rounded bars, riveted at both ends into top and bottom bars of 1½-inch × ¾-inch iron, the arrises of the top bars being rounded off to a flat half-round, and the lower bars let into the edges of the stone steps. These rails are to be secured to the stone step edges, and the soffits, by means of small stubbs 2¼ inches × ⅜ inch, let in and leaded to the stone, and fitted with a nut of 1 inch × 1 inch × ¼ inch, tightened to the bar and filed off. The angle newel at the first step is to be of 1½-inch round iron 10 feet 3 inches long, let in and leaded; the 3 upper newels are to be of 1¼-inch round iron 5 feet long, fitted on the top with cast-iron ball ornament, tapped screwed to the newels. The number of common balusters to these staircases is to be each 35, the average length being 4 feet; the top and bottom rails are to be framed to the newels and secured to the walls. The *staircases* to Servants' apartments are to be fitted with *framed balusters* of ¾-inch round iron, averaging 3 feet long, riveted and framed as before. No 34 being fitted to each staircase, the bottom rail is to be 1½ inch × ¾ inch, framed to the newels and stubbed to the steps as before; the top rail is to be 1 inch × $\frac{3}{16}$ inch, framed for woodrails, which are to be of Honduras mahogany 3 inches × 2½ inches, moulded, grooved, and screwed to the iron core. The opening to the door head sash on the landing of the several staircases is to be fitted with top and bottom rails as before, with No. 10 3 feet 7 inches ¾-inch balusters framed as before. The *staircases* in the towers are to be fitted with inch round wrought bar balusters, each having 106 balusters of 5 feet long in the general height, and 69 ditto of the same length across the several landings next the windows, and 26 ditto of 4 feet long on the ground-floor, and 16 ditto of 7 feet 6 inches long in the top of tower flight, with 24 additional up to the floor in ditto. The newels are to be of 1½ inch round iron, No. 4 being 7 feet 3 inches long, No. 7 being 6 feet long, No. 4 being 5 feet 8 inches long, and 2 being 5 feet 3 inches long; this applies to each staircase. No. 7 of the newels in each staircase are to be fitted with cast ornamental balls fitted with tapped screws as before; the bottom rail is to be 1½ inch × ¾ inch, framed, let in and secured by stubbs as has been already described; the top rail is to be of the same kind, and secured in the same manner when under the soffit of the stairs, but is to be a flat half-round with arrissed edges when clear of the soffit.

There are to be *framed gates* to be fitted to each tower, one under one of the ground-floor staircases, the other at the top of the tower on the way to the roof; these are to have 1½-inch round standards, the rails of the gates are to be 1½ inch × ¾ inch as before and 3 feet in the height; they are to be strengthened by an additional piece 7 inches long for the centres and the lock rails; the middle rail is to be carried across the middle of the rails on the ground-floor, which are to average 7 feet 3 inches long; these gates are to be fitted with steel turned centres and gun-metal cups with 6-inch dead iron lock and box staple all secured with strap bolts, &c., the lock centres, &c., are to be let in the stone and leaded.

The *upper gates* on the *top landings* are to have a top rail added over the gate as before, and 8 balusters of 3 feet 3 inches as before, framed over the same.

The returns upon 2 of the top landings (those that have not the gates) are to have top and bottom rails as before described, and each is to have 8 bars of inch round iron framed as before, each 3 feet 3 inches long; these landings are to be further fitted with a newel of 1½-inch round iron 5 feet long, with round ball as before, and also 7 bars of inch iron as before, 5 feet long; the whole being framed and screwed in the same manner as has been already described.

No. 52 *air-bricks*, 14 inches × 6 inches, are to be fitted to the underneath of the ground-story floor. No. 26 *air-bricks*, 9 inches × 3 inches, are to be fitted for supply of air to the fire-places in the upper floors. No. 16 cast-iron gratings with rims, 21 inches × 15 inches, are to be fitted to the areas of the quadrangles.

No. 4 cast-iron *balconies*, each 14 feet 6 inches run, 3 feet high, with No. 6 ornamental newels with vases in 5 panels with wrought-iron toprail moulded, the whole being framed, let into the stonework and leaded, the whole to be moulded with drawback moulds, and the pattern is to be of the most approved kind. The edge of the flat of the north front building is to be fitted with a *framed railing* having wrought-iron bottom and top rails of 1½ inch × ¾ inch as before; the whole is to be divided into panels by No. 36 wrought-iron newels 3 feet 9 inches long, 1¼ inch × 1¼ inch, with framed return foot fitted with countersunk screws to secure to the flat; these newels are to be twisted and fitted on the top with ball ornaments 3½ inches in diameter, which are to be tapped and screwed to the newels. No. 16 *ornamental panels* of cast iron are to be fitted to the several distances shown; they are to be 3 feet × 2 feet, and are to be framed into position; No. 120 ¾-inch round balusters are to be framed into these panels, each 2 feet 9 inches long; No. 100 square ¾-inch balusters like the above, are to be framed in the like manner; these last are to be twisted in the centre with an open twist of 12 inches long. The half-brick wall over the wine-cellars of the north buildings is to be carried on T irons of *rolled plate*, each 3 inches × 3 inches, and 7 feet long each; they are to have York templates and stone covers.

No. 4 *register stoves* are to be fitted to the front building attics 24 inches wide; No. 6 ditto for the one-pair, 30 inches wide; No. 2 ditto for the ground-floor study, 24 inches wide; and 2 ditto 30 inches wide; also 4 ditto for sitting-rooms 36 inches, with black and bright bars, the prime cost of each being 10*l.* *Ranges* of 4 feet opening are to be fitted to the kitchen at a prime cost of 7*l.* 10*s.* each, and 1 of the same kind is to be fitted to the large kitchen; these are to have *ovens and boilers*, *washing-coppers* 2 feet in diameter, with double door front and soot doors; damper and bars are to be fitted to the sculleries; No. 10 *register stoves* are to be fitted to the Servants' bedrooms with 24-inch openings; No. 6 ditto are to be fitted to the better rooms with 30-inch fronts; No. 4 ditto with 36-inch fronts. A 3 feet slip cheek range is to be fitted to the Servants' hall. A 3 *feet range* with boiler and oven, is to be fitted to the Nurses' kitchen, and a 30-inch register stove in the room adjoining.

The *rain-water pipes* from the east and west range of buildings are to be 5 inches in diameter; they are to be well secured to the brickwork, and the joints are to be puttied previous to being put back in their places. The pipes from the flat in the tower are to be 4 inches in diameter, with 2 cistern heads and shoes. The eaves of the kitchen on the north fronts are to have 6-inch OG gutters and clips and screws, having one stopped end and cistern-head to each; the down pipe from the dormitory on this flat is to be fitted with a shoe; the down pipes on the roof of the arcade at the south fronts are to be fitted with shoes of delivery; the arcades are to be fitted with OG gutters as last described, with cistern heads and 5-inch down pipes. The east and west ends of the low buildings of the north front are to be fitted with 5-inch down pipes; those from the school and the hall are to be of the same size; the pipes that deliver themselves upon those low buildings from the upper roofs are to be fitted with shoes of delivery.

The eaves gutters to the offices in the kitchen yard are to be 6-inch OG, with clips and screws; the joints are to be set in red lead; they are to be fitted with proper angles; they are to have nozzle-sockets to the down pipes, of which there are to be 2 stacks on the coal and engine-houses, and 2 stacks on the wash-house.

The entrance from the coal-yard to the heating-apparatus vaults is to have No. 20 *wrought-iron balusters*, ¾-inch round, averaging 3 feet long, with a newel of 1¼-inch round iron; these are to be let into the stone steps, and leaded and framed to a top rail, 1½ inch × ¾ inch, rounded on the top and chamfered.

Stable-traps are to be fitted to the several open yards of the kitchens; to the north buildings; to the Boys' privy yards; to the Servants' water-closet and coal-yards; and 2 are to be fitted to the interior of the laundry.

SLATER.

The *roofs* of the dormitories on both slopes, the roof-slopes of the north building, with the north slope of the low building, the slopes of the school and hall, with the roofs of the coal-house, engine and boiler-houses, and laundry, are to be covered with *duchess slating*, of the stoutest quality, laid on boarding with copper nails; they are to be close cut to the ridges, hips and eaves, windows, slopes, ventilators, &c. The roofs of the Boys' privies, the Servants' water-closet, and the low buildings attached to the kitchen buildings of the north fronts, are to be covered with *countess slates*, as above.

The *roofs of the arcade*, the school, and the hall, are to be formed of *slabs of* 1-*inch slate*, with top fillets; the whole set in oil cement, well secured with screws, and the joints painted; the roofs of the low buildings of the school and hall, with the roof of the arcade on the south front, are to be covered in the same manner.

The *risers of the Boys' privies*, the Boys' and Men-servants' *urinals*, of the ventilators to the engine-house, wash-house, and laundry, are to be covered with slate slabs, all properly fitted, screwed, and set in oil cement.

The cover of the hot-water pipes in the school, and the openings in the several cement floors, are to be fitted with rims of rubbed self-faced.

PLASTERER.

Materials.—The whole of the *lime and hair* is to be prepared from well-slaked *chalk lime*, sound *long cow-hair*, and clean sharp *sand*. The *laths* are to be of heart-wood, free from all sap.

The *upper part of the roof of the towers* is to be lathed, plastered, and set in 2-coat and whited when dry; the arrises to be floted straight in gauged stuff. The soffit of the dormers is to be done in the same manner, as are also the cheeks, the arris being finished as above. The lower part of the walls of the west tower is to be rendered, flote, and set, and colour when dry. The *brickwork in the interior of the belfry*, and the space above the lead flat is to be stopped and twice limewhited. The *ceiling* of the room under the top floor of the west tower is to be lathed, rendered, floted, and set, whited when dry; the walls are to be rendered, and floted, and set, and coloured when dry; the reveals of the windows are to be rendered, and floted, and set, and the arrises of the reveals and the flues are to be floted in gauged stuff; the soffit of the stairs is to be lathed, floted, rendered, and set as above, quirks being cut to the angle bead.

The *ceiling under the towers*, that over the landing of the stairs and the closet, the kerb of the closet, the ceiling of the attic dormitories, the slope and kerb of the same, are to be lathed, rendered, floted, and set in 3-coat work, and when dry they are to be whited or coloured. The ceilings of the dormer windows are to be lathed, rendered, floted, and set as above, and whited when dry; the quirks are to be cut to the staff-beads.

The part under the slope of the kerb is to be rendered, floted, and set; when dry, coloured.

The whole of the *brickwork* of the attic dormitories, and of the staircase on all parts, is to be well stopped and twice limewhited. The whole of the *brickwork* of the staircase to the lower dormitories, and the soffit of the landings and stairs there, so also the brickwork of the dormitories themselves, where not otherwise covered, are to be well stopped and limewhited twice.

The ceilings of the lower dormitories are to be lathed, rendered, floted and set, and whited when dry.

The lower part of the tower staircases is to be well stopped and limewhited twice, the soffits and landings of the stairs being done in the same manner.

The *interior of the water-closets* is to be *lined with Roman cement*, 6 feet 6 inches high on an average; this is to be floted and trowelled smooth for painting, the circular soffits of the recesses in the water-closet being finished in the same manner; the arrises being slightly rounded, the reveals of the windows within these water-closets are to be finished in the same manner, the whole being twice coloured.

N.B.—The plastering or rendering, &c., of the other parts were to be executed in the usual manner.

Seven of the rooms on the north front buildings are to be fitted with *moulded cornices* of No. 21 inches girth, with all proper mitres, &c.; 2 of the rooms are to be fitted with cast ornaments of 4 inches girth. The Undermasters' library and common room are to be fitted with a *moulded cornice* 12 inches girth, fitted with all proper mitres.

All the arrises and angles, where the walls are plastered, are to be run in cement, as are all the circular edges of soffits and recesses.

The *School-room and hall* are to have their ceilings, and slope, lathed, rendered, floted, and set, the soffits of the dormers are to be done in the same manner, the whole is to be coloured when dry; a moulding 10 inches girth is to be run under the pole-plate stopped against the tie beams; the walls are to be stopped and twice limewhited. The ceilings of the several recesses are to be lathed, rendered, floted, and set, the walls are to be stopped and limewhited; the recesses are to be fitted with cement skirtings 6 inches high, having the edge an arris.

Cement floors are to be laid down in the attic dormitories, the lower dormitories, and the corridor connecting these last; the floors are to be formed of 1 course of plain tiles laid flat on the boarding ½ inch apart; they are to be grouted with Portland cement and small shingle, and the surface floted to receive a ⅜-inch thickness of Parian cement, which is to be trowelled smooth, the whole thickness including the tiles is to be 2-inch thick upon being laid down. The floor is to be kept 1 inch clear of the several walls, and made good after the general surface is dry, the several rims and gratings for ventilation are to be neatly flushed up to.

CEMENT FLOORS.

Ground-floor, kitchen, scullery, lobbies, studies, Servants' hall, and store kitchen, larder, large school, hall, and the ends of the hall, are to have their floors formed with a proper levelled surface throughout; where the ground has been moved, it is to be well rammed. The *surface* is to be *covered with a concrete* bed, 4 inches thick, upon which is to be laid a *bed of Portland cement,* and small shingle floted to receive a ⅜-inch bed of *Parian cement,* the full thickness, including the Parian, being 2 inches; the several gratings and ventilators are to be neatly flushed in the floors.

Concrete Bed under Wood Floors.—The several rooms, &c., which are to have deal floors, are to be first levelled as described above at the level shown on the drawings, and covered by a *bed of concrete,* 4 inches thick, upon which the sleeper walls are to be built. The *concrete* used for these several beds is to be formed of ground grey Dorking lime, and clean averaged sized gravel in the proportion of 1 of lime to 6 of gravel.

The *floors of the arcades* to all the quadrangles, with the entrance gateway, the several recessed lobbies, &c. to the staircases, are to be formed of *Orsi and Armani's metallic lava*, ¾ inch thick, laid upon a bed of floted concrete plaster, ¾ inch thick, which is to lie on a bed of concrete as above described of 4 inches; the whole surface is to be well rammed where it has been made up or moved previous to the concrete being laid down.

The *areas of the quadrangles* are to be properly formed with slopes, falls, &c., as shown, all made on moved ground being properly rammed; they are to be covered with 2 beds of 4-inch coarse, and ¾-inch fine concrete as described above, and then laid with a bed of ¾-inch pure *asphalte*, native as from the quarry; this surface is to be finished in lines and channels, so as to afford every facility for the escape of the water to the cesspools, which are to be neatly set in the asphalte, being set a trifle lower than the surface. In the basement the ceilings of the cellars at the north end are to be lathed, rendered, and set, the walls being stopped and limewhited.

The *floor of the wine-cellar*, &c., at the north end, is to be formed of an inch of *Roman cement*, laid on a bed of concrete 4 inches thick.

The *floor of the beer-cellar* is to be formed of a bed of *concrete* 6 inches thick, finished, floted with fine surface; the whole being laid to a centre point.

The *surface of the privy yards, urinals, and privies*, is to be covered with a 4-inch bed of *concrete*, and ¾-inch *asphalte* as before, laid with all proper channels, falls, &c., to take the water from the surface.

The floors of laundry, lobby, and washhouse, the Servants' water-closets on the east side, and their yards, are to have their surface covered with a 4-inch bed of concrete, and ¾-inch *asphalte* as before, laid to proper falls and levels, as also the yard leading from the coal-house to the stairs to the heating vault, the eye shoot to the vault being by a tooled York stone 3 inches thick, 2 feet square, with a coal plate let in.

The whole of the walls of the yard and the stairs and vault are to be stopped and limewhited as before.

The floor of the coal places is to be in 6-inch concrete, properly laid in every part.

The surface of the several enclosures and of the yards is to be laid with 4 inches of concrete as before, and ¾-inch asphalte; the surface of the yards having a stable-trap to take off the surface water, and the whole laid to such falls and levels as will meet the requirement.

Generally.—The Plasterer is to prepare all the cement castings described in the Mason, Carpenter, Joiner, and other trades, and is to provide all requisite models for approval, moulds for casting, and to assist in the fixing of the same, and is to make good all defects and blemishes, and clean down the whole of the several floors, stairs, &c., both internally and externally, during the progress of the works in these places, and at completion leave all clean, clear, and perfect.

PAINTER.

Materials.—All the *lead* used to be pure and free from adulteration. Oil used is to be pure linseed, and the *colour* is to be well ground, and to have a due proportion of *driers.*

The whole of the *cement work* mentioned for the ornamental portions of the Carpenter, Mason, and Bricklayer, and Joiner, is to be *well dried,* and the exposed surfaces *painted* with red lead previous to their being fixed.

The whole of the *ironwork,* whether wrought or cast, and whether in girders, plates, bolts, traps, gratings, pipes, or other forms, is to be *painted* 2 good coats of red-lead colour previous to their being fixed in their places. All the *Carpenter's work* that is planed or exposed to view, and all the Joiner's work, is to be well primed previous to its being fixed, and when fixed it is to be well stopped and touched up. The whole of the *external work* in connexion with lead or stone, where in cement, wood, or iron, is to be painted to match the material on or in which it is fixed, the whole being done in 5 oils.

The *external wood* cornice gutters are to be painted twice in red-lead colour, and stopped previous to the lead being laid therein.

All the *external wood and ironwork* is to be painted 4 times in oil, the general colour being a stone, although part of the ironwork is to be finished bronze and lead colour; the *great entrance gate* and the side gates are to be *grained oak* in 2 tints, and twice varnished.

The *interior wood and ironwork* is to be painted 4 oils, and all are to be finished in plain colours except the handrail where in deal, and the Head Master's drawing-room, dining-room, and study, the Secretary's parlour and study, the office and board-rooms are to be *grained and twice varnished.*

All the *berth furnitures* are to be *painted* and finished as described in the Joiner. All the *wainscot fittings* are to be *oiled and hard rubbed* as described in Joiner. All the *mahogany handrails* and the fittings for the several closets are to be well grounded and *French polished.*

GLAZIER.

All the glass is to be of good quality and colour, the work being fully cut and well stopped in the back, putty being neatly cut off.

The general glass in several dormitories, staircases, school, hall, studies, Servants' apartments, and in short all except the Head Master's and Steward's apartments is to be 16-oz. *sheet*, 167 feet super, in the largest squares being 21-oz. sheet.

The windows of the Head Master's and Steward's apartments, and the offices, &c., are to be in the *best crown*.

All the glass in every part is to be left perfect and clean on both sides.

BELLHANGER.

The bells are to be of good clear tone, and to differ; they are to be hung with concealed wires, and all proper cranks, springs, &c.

One large bell is to ring from the entrance-gateway by the door of the Porter's lodge; it is to be provided with pendant handle of wrought iron, which is to be ornamental and turned.

Two external bronzed sunk pulleys are to be fitted to the Head Master's and Steward's side gates.

No. 11 sunk lever pulls are to be fitted to rooms on the ground-floor of the north front buildings.

No. 6 pulls are to be fitted to the several bed-rooms on the north front buildings.

PAPERHANGER.

All the papers are to be of the prime or first cost mentioned; they are to be well hung, being close cut, and the walls first sized and well rubbed down.

The rooms of the Undermasters on the mezzanine are to be papered with 1½*d.* paper.

The Housekeeper's rooms are to be papered with 1½*d.* paper, as above.

The walls of the Undermasters' library and common room are to be papered with 3*d.* paper.

The walls of the Nurses' living room are to be papered with 3*d.* paper.

The rooms on the one-pair floor of the north front buildings are to be papered with a 3*d.* paper.

The staircase and passages are to be papered with 3*d.* paper.

The Visitors' and Committee rooms are to be papered with 3*d.* paper.

The several rooms and passages on the ground-floor are to be papered with 6*d.* paper.

Specification for a DWELLING-HOUSE, No. 19, GROSVENOR SQUARE, LONDON, *with its Appurtenances and a Stable Building, for Simon Watson Taylor, Esq.* THOMAS CUNDY, Junior, *Architect.* 1855.

EXCAVATOR AND BRICKLAYER.

Carefully *pull down* and entirely clear the site of the intended new erections, comprising the house No. 19, Grosvenor Square, with offices, back buildings, and stables, as low as shown by the drawings at the rear thereof. Properly *clean and stack* such of the old materials as shall be saved and adapted, and which shall not be objected to by the Architect for re-use in the new buildings, and clear and cart away previous to the commencement of the Contract such as may be prohibited as unfit, together with all rubbish and other useless material.

Carefully *strut and shore* the flank wall of No. 18, with 2 long angle double-raking shores and whaling pieces; also 1 raking long double shore in the centre, with such short pieces as may be thought necessary when the old wall of No. 19 is removed. And provide for strutting and shoring the stable wall of No. 18 when the stable of No. 19 is pulled down.

Note.—All underpinning to be charged day work.

Give to the *District Surveyor, the Surveyor of Pavements, and Commissioners of Sewers* the requisite notices, and pay them their proper *official fees* and charges.

Hoard.—Erect and maintain in such manner as shall be required by the Surveyor of Pavements a proper close hoard, with boarded foot-way, and post and rail, next the carriage-way in Grosvenor Square. Provide for paying to the parish authorities their charge for relaying or renewing at the conclusion of the Contract the foot-pavement and kerb, and the reforming of the channel course and roadways interfered with by these works.

Digging.—Perform all the requisite digging for the foundations, drains, vaults, or other works, to the depths and widths shown by the several drawings to be required. Note.—The new basement level is the same as the present basement level. Fill in and make good the ground to one uniform level of 15 inches below the basement-floor line, properly rammed and consolidated, taking care not to disturb the new drainage when laid on. Empty all cesspools now upon the site, and fill them up with concreted brick rubbish.

Dig and remove the whole of the present old drains, and drain soil and fill up the ice vault with concreted brick rubbish. Cart away all surplus earth from the excavations, and all rubbish and useless material, from time to time during the progress of the works, and finally leave the whole of the premises clear thereof at the completion. Properly strut the trenches; if so requiring, pump and remove all water which may come into the foundations from springs, drains, or otherwise, and make good all damage which may occur during the works.

Lay in a *concrete foundation* of the depths and widths shown by the drawings, to be composed of $\frac{1}{8}$th of fresh-burnt ground Dorking stone lime, and $\frac{6}{7}$ths of clean-washed Thames ballast, *sifted coarse*, mixed in small quantities, and while hot shot into the trenches from a height of not less than 6 feet, and not disturbed afterwards otherwise than for levelling the surface.

Drains.—Provide and lay down, as described and shown by blue lines upon the basement plan, 6-inch and 12-inch stout earthenware pipe drainage, glazed inside, having all the requisite elbows and junctions, and a fall of not less than 1½ inch in 10 feet. To be continued to the sewer in Grosvenor Square. The joints of the pipes to be carefully made with cement, as shall be directed, and left clean round the inside, and the whole to be firmly bedded on hard ground.

Provide for *entering the sewer* in Grosvenor Square with excavation, forming in one of the vaults a *brick cesspool*, rendered with pure cement on the inside 2 feet square, with a York dip stone, and 2-inch York cover stone, with flush ring over. The *drain* from the trap to the sewer is to be a 1 foot 2 inches gun barrel, 4½ inches all round, cemented at the bottom with pure cement, and having as sharp a fall as possible. Provide for a *small cesspool* trapped at the bottom of all the rain-water pipes, with branch drainage, as may be directed.

Scaffolding.—Provide all requisite, safe, and sufficient *scaffolding*, braces, and struts, for the performance of the several works hereby contracted for, with all boards, ledgers, poles, putlogs, cords, ladders, and all other requisite materials.

Brickwork.—Execute the whole of the brickwork required in the erection of the several parts of the house and its appurtenances in the most workmanlike manner. The *bricks* (excepting where otherwise described for facing) are to be the best hard, grey, burnt stocks, with mortar composed of 1 part of best Dorking grey-stone lime to 2 of sharp, clean Thames sand, mixed in small quantities. The *walls* to be carried up evenly all round, and grouted with hot lime every scaffold height; the cross-joints being flushed in properly at every course, no 4 courses to rise more than 11½ inches.

The *Roman cement* is to be of the best quality, from Messrs. Parker and Co.'s, mixed in the proportion of 1 of cement to 2 of sharp Thames sand. The *Portland cement* is to be of the best quality, from Messrs. White, mixed in the proportion of 1 of cement to 3 of sharp Thames sand.

White Brick Facing.—Face the whole of the Grosvenor Square front, above the level of the one-pair floor line, also the back, front and wing building, with the chimney-stacks, where in sight, with the *best white bricks*, of a sample to be submitted for approval, properly bonded to the stock brickwork, neatly flat-joint pointed. The stable building to be faced with picked stocks.

Put gauged arches to all external openings where not cemented.

Repair the present *front vaults* and repoint. Reform the coal shoots, if so requiring, and insert new cast plates. *Asphalte* the top of the vault intended to be used as Servants' water-closet. Turn 1 course of 4½-inch *brick arches* over the whole of the *offices* on the site of the present garden, filling up the spandrils to the crown with concrete, and rendering the whole upper surface ¾-inch thick with asphalte, with 3-inch cast-iron semicircular gutterings next the areas, as currents for any water which may enter from the surface. Turn 4½-inch *brick arches* in cement, with 1 course of tiles in cement, over the space occupied (on the basement plan) by the scullery and larder. Fill up the spandrils solid, and render the upper surface ¾ inch thick with asphalte. Turn a 9-inch brick bridgeway to portico across area, forming splayed openings for lighting the basement passage, as shown by the section. Turn a 3-course *tile arch* in cement above portico, with ¾-inch tie-rod across the middle, with plates, nuts, and screws. Turn 4½-inch *brick arches* in cement under the entrance-hall, the staircase, and corridors connected.

Form a 9-inch brick arched *strong closet*, turned in 2 rims, having a thickness of sand between and hollow walls round.

Turn arches in Roman cement over all the external door and window *openings*, and over such of the internal openings and archways as are so directed by the drawings, the ends of the lintels being splayed off to spring the arches from the brickwork. To build the brickwork, in Roman cement, entirely through the thickness of the walls at the level of the several floors, 2 feet deep on the ground and one-pair floors and 18 inches on the floors above. Rake out and point up the arches and other parts built in cement, and turn neat gauged arches to the window openings of the back front, as also to the door and window openings of both fronts of stable building. Form the *string courses,* quoins, and window architraves, and other string courses to the stable fronts, neatly in brickwork. Cut and form such splays, recesses, or chase, for water pipes or otherwise, required by the several works. Turn, *parget and core* the *flues,* which are to be built to a gauge of 14 inches × 9 inches, closely contracted at the mouth of the fire-place, except the kitchen flue, which is to be 18 inches × 14 inches. Put to each where there *is* a projecting breast a *chimney bar* of ½-inch wrought-iron 2½ inches wide, properly turned up at the ends. Turn 4½-inch *brick trimmers,* or 2 courses in tiles, in cement generally to all the fire-places in the house and stables.

Put to the *kitchen fireplace* a full-size iron *hoop,* and a proper soot-door, opening in the face of the flue externally, above the party fence wall, where shown by the drawings. Provide for *soot-doors* to the flues gathered from the Men's rooms, under the garden to the back front (east party wall).

Bed in lime and hair mortar all plates, woodbricks, templates, stone or ironwork which are to be laid into the walls, and point up all door and window-frames. *Point up,* at the completion of the works, all open or defective joints in the brick facing, or elsewhere. Form 8 *air passages* from the area to the underside of all the basement floors, so as to cause a thorough current; and insert air-bricks, 9 inches × 3 inches, where directed, externally. Provide for all brickwork required in piers, or otherwise, for the basement boarded floors, the stone staircases, and pavement throughout. Render with lime and hair the *window backs* throughout. Bring forward, in brickwork, the several *projections* shown by the drawings to be required for the forming of the rusticated ground floor with string courses; also the pilasters and entablatures, properly bonded to the walls, and inserting all sufficient stone core for the various projections.

Provide for inserting 12 cwt. of *vat hoop iron* in the walls as shall be directed, and for building the wrought-iron guides into the brickwork on each side of the 2 lifts, which will be provided for the Contractor.

Carry up all the *chimney-stacks* shown by the drawings, and set thereon the requisite number of full-size Portland cement chimney pots, properly flanged with tiles and cement. The kitchen pot to be 18 inches × 14 inches.

MASON'S WORK.

Portland Stonework.—Provide, work, and set in the best manner, with stone of the best quality, the several parts of the building shown by the drawings to be so finished. The stone to be from the Portland Waycroft Quarries Weatherstone, not too fresh quarried, but free from vents, shakes, and all other defects, and to be set in its proper bed. Perform the requisite *labour*, of every description, usual and requisite in the execution of Portland stonework, properly rubbed and otherwise finished in the most workmanlike manner; and provide for all requisite *dowels* of slate or stone, and for cramps of zinced iron, wherever necessary. Provide and set a *portico*, as shown by the drawings, with plinths, steps, pavement, columns, and pilasters, also the entablature and balustrading of Portland stone; and the *balustrading* to the front area, as shown by the drawings, of Portland stone. Provide and set, well tailed into the walls, Portland stone *balconettes*, with carved consoles and balustrading on the same, to the windows of the one-pair.

Sills to Windows.—Portland weathered and throated sill, 8 inches × 4 inches, to all those windows shown by the elevations to be so finished, excepting only the windows of the stable-building and of the kitchen offices, which are to be of rubbed York stone. Those of the front windows to be of the sizes shown by the detail drawing.

The portico and entrance doorway from Grosvenor Square to have rubbed *Portland stone steps*, with moulded nosings back jointed, also 3-inch Portland stone landing, properly bedded in mortar, over the bridgeway; and to the back doorways on the ground story, in entering from the garden, Portland *stone steps* back jointed. Put across the areas in the garden, where shown by the drawing, 4-inch Portland *stone landings*, properly rubbed and bedded with joggled joints, and to receive iron railings. Rubbed Portland *stone kerbs*, 8 inches × 7 inches, round all the areas in the garden, morticed to receive iron railings.

2-inch rough York paving on 1 course of bricks bedded under all the joints and pointed in cement over the whole of the *kitchen offices* intended to be formed into a garden.

Put to each of the external and internal doorways throughout the basement 3-inch rubbed York stone sills, the external to be raised an inch above the area level, and to the vault doors 3-inch tooled York sills and risers, forming a step down into the vaults.

The sill to be raised an inch above the areas. The whole of the sills are to be morticed where there are door frames.

Put to the archways under the garden front of the stables 3-inch tooled *York sills* the width of the wall. Lay throughout the areas on the basement, also to the part described as larders under the stables 2-inch York stone picked with even face, properly tooled and squared, and laid in regular courses, and repave the vaults at a lower level with the best of the old paving stones. Dished *sink stones* rebated for bell traps to all the areas as may be directed. (Shown by basement plan.) Lay the whole of the internal passages, the Servants' hall, the strong closet, the kitchen, scullery, pantry, and passages adjoining, with 2-inch rubbed York stone in regular courses, properly squared and pointed.

Note.—The whole of the paving of the basement, except the area, is to be laid in mortar on brickwork 2 courses high, in regular courses, with hoop iron under the cross joints properly squared and pointed, and the joints are to be cleared off at the completion.

Steps of tooled Yorkshire stone solid, well tailed into the walls from the front area to the pavement level, with the curtail rounded. The steps to be morticed at the ends for railings. 3-inch rubbed Yorkshire stone treads and risers, with landings to the *Servants' staircase* from basement to entrance-hall. Rubbed Yorkshire *stone steps* with 4-inch landings to the back staircase from the basement to the attic-floor, with splayed soffits properly back jointed, pinned into the walls 5 inches.

Note.—The tread and riser staircase is to have the treads projected $\frac{3}{4}$ inch before the risers at the ends, and are to be fairly tooled on the under side where in sight. To be morticed for the railings and securely pinned into the walls in cement.

Picked Portland stone steps to the *best staircase* from the ground-floor to the two-pair, with moulded nosings, and returns and shaped soffits, properly back jointed and securely pinned into the walls in cement, morticed at the ends as may be directed to receive the iron railing of the staircase. $4\frac{1}{2}$-inch picked Portland *stone landings*, moulded to accord with the steps, sunk and left rough on the underside to receive wrought-iron bearing bars and plaster soffit. To be securely tailed and pinned 9 inches into the wall in cement.

Protect during the progress of the works the several treads of the staircases by slate or tiles bedded therein.

Lay the *entrance-hall*, the best staircase, and corridors, with picked 2-inch *Portland paving*, neatly squared and laid in regular courses diagonally with *marble dots* (as shown by drawings) upon dry rubbish and grouting, 4 inches thick on the crown of the arches. The pointing to be neatly made and left perfect at the completion.

2½-inch tooled York throated *coping* to the raking flues next party walls from the kitchen offices to the back front of the house.

Provide and fix upon brick piers a Portland *stone sink*, 5 feet 6 inches long × 2 feet 6 inches wide net inside measure, having a brass bell grate and 3-inch waste to the drains.

Chimney-pieces.—Put to the *kitchen fire-place* a 2½-inch Portland stone chimney-piece, with 9-inch jambs with plinths, 2-inch mantel with keystone 9 inches wide, corners rounded 2½ inches, rubbed York front and back hearth ; and to the scullery, the Servants' hall, the pantry, and still rooms, 1½-inch *Portland stone* mantle and jambs, 8 inches wide, with 1½-inch shelf rounded corners, and 1½-inch rubbed York front and back hearth. Also to Men's dressing-room and cleaning-room. Put to the Housekeeper's room and Butler's room *old marble chimney-pieces* as shall be directed, with 1½-inch rubbed York front and back hearths. *Omit* the chimney-pieces and hearths of the ground and one-pair floors complete. Put to the whole of the bed-rooms and dressing-rooms of the two-pair and three-pair floors neat vein *marble box chimney-pieces*, having inch square shelves, 8 inches wide, ¾-inch jambs 6 inches wide, with plinths and cap-moulding and slips at returns, 1½-inch York rubbed front and back hearths. Note.—No. 5 of the chimney-pieces to be of *green Galway marble* instead of vein, if preferred. To each of the bed-rooms on the attic floor neat rubbed *Portland chimney-pieces*, with 1½-inch rubbed York front and back hearths, as shall be directed suitable for these rooms.

Note.—The *front hearths* to be not less than 20 inches wide.

Provide for all sufficient 2-inch and 3-inch rough York *stone core* for the several cornices, entablature, and window dressings requiring such support. The core to be well tailed into the walls. (Old stone may be used here.) Provide all the requisite 3-inch, 4-inch, and 5-inch *templates of York stone*, shown by the drawings to be required for the ends of iron girders, or for bearing beams, properly bedded on the walls in cement, and sunk to receive the flanges of girders or corkings for bearing beams where so required. Note.—Old stone and landings may be used for these works, the sizes to vary from about 18 inches × 9 inches, for binding joist, purlins, &c., to 2 feet to 3 feet by about 15 inches for iron girders.

Clean off, prior to the completion of the contract, the whole of the Mason's work, and point up all defective joints. *Rectify* any damage that may have occurred during the works. *Cover up* the stone steps, plinths of columns of portico, or elsewhere that may be thought requisite to be protected from damage.

Stable Building.—Tooled York stone plinths morticed for the *heelposts*, 9 inches high, 6 inches × 6 inches, the edges taken off bedded on brick piers in cement. Tooled *York plinth*, as shown by the drawings, sunk to receive the cast-iron column in the coachhouse. Lay the whole of the coachhouse and space under the staircase, with 2-inch tooled York *paving* in mortar, properly squared and firmly bedded. Cover stone with a flush ring over the *coal-shoot* in the coachhouse. 4-inch tooled York *sills to the doorway* entrances to the coachhouse and stables. Form a *brick cesspool* 15 inches square, with 5-hole stone lined with pure cement, in the centre of the coachhouse as shall be directed, having a 2-inch York cover stone, with flush ring and branch drainage complete. A 2½-inch tooled York tread and riser *staircase* to bed-room floor, with 3-inch landing at top and bottom, properly tailed into the 9-inch wall, and built into the 4½ brick in cement wall next the stable. The heads to project ¾ inch before the risers. 3-inch tooled *York landing* on corbels to the doorways of the bed-room floor, properly tailed into the wall, morticed to *receive a crane*, and to put a 3-inch tooled York sill to the doorway. Put to each of the fire-places neat Portland stone box chimney-pieces suitable for the rooms as may be directed, with 1½-inch rubbed York front and back hearths. A rubbed York stone sink rebated for brass washer in the lobby next the water-closet.

Stable Paving.—Pave, with the best hard-burnt picked Malm paviors on edge in mortar, the whole of the stables properly grouted with hot lime, having the surface levelled to the sunk iron gutters as shown by the drawings; and provide for paying to the parish authorities for relaying such portion of the pitch paving in the mews, as shall be disturbed by these works.

CARPENTER AND JOINER.

Materials.—The whole of the *fir timber* is to be of the best sound Memel or Dantzic, free from sap, shakes, large or dead knots or other defects. The *deals* are to be of the best quality seasoned Christiana, and free from all defects.

Provide all necessary *timbers for stays,* struts, ties, shores, scaffolding pieces, or other purposes that may be required, and for all sufficient centring for arches, turning pieces, rules, templates, moulds, levels, or other things required for the execution of this contract.

Frame and fix in the most workmanlike manner the roofs and several floors of joists properly trussed or trimmed of the scantlings figured, and otherwise strictly in conformity with the several drawings, and with such further instructions as may be given. Cover the whole of the roofs with ¾-inch yellow *deal rough boarding* for slating, putting ¾-inch deal bar boarding, and tilting fillets wherever required. Put deal *rounded rolls* 2½ inches wide to all the hips and ridges. Lay inch yellow *deal boarding* to all the gutters and flats upon proper fir bearers, forming 1½-inch rebated drips, 2-inch rounded rolls to the flats, not more than 2 feet 6 inches apart, and proper large cesspools as shown by the drawings. The *gutters* and flats not to have less fall, if possible, than 2 inches in 10 feet. Frame and trim in the kerb roof the several *dormer windows* of quarters, 4 inches × 4 inches, and 4 inches × 2 inches, with ¾-inch deal boarded top and cheeks. The sides and soffit inside the dormers are to be finished with ¾-inch match boarding. *Ashlaring* to the lower part of slope of roofs with 4 inches × 3 inches, and 4 inches × 2 inches quarters as shown by the drawings, with 1¼-inch jamb linings, and the dwarf cupboard doors complete. Note.—That no timbers be nearer than 12 inches to any flue. Do. That no rafters, quarters, floorings, or joists, be a greater distance apart than 12 inches.

Trim for and frame with 4 inches × 4 inches quarters the several *light and air shafts*, grooved on all sides, and fitted with inch deal louvre boarding. The kerb piece to be raised 5 inches from the slating or flats at least. Put to each of these shafts 2-inch deal bar *skylights*, glazed with 21-oz. horticultural glass, widths not greater than 18 inches, by the width of skylight (say 3 feet to 3 feet 6 inches). Bed and point the skylights on the deal louvred frames with red lead, putty, or cement. Fit up to each of these *shafts* 1½-inch *deal ovolo sashlights* made to open on the soffits of ceilings on friction rollers working in deal rebated frames, grooved and beaded for the plastering. Glaze the lights with Hartley's patent glass ⅛-inch thick, and put proper lines and pulleys with brass axle guides. Trim for and form a dormer door on attic floor with oak sill and boarded top, and cheeks to correspond with the several *dormer windows* on this floor. Fit up with rebated frame, and beaded linings inside, and hang a 2-inch bead and butt square framed door with proper iron-rim lock and 2 bolts. A similar door and frame to the last described to the doorway opening from the passage to the flat over the best staircase. Trim for and frame with deal kerb pieces to form the *skylights* over the 2 staircases, laying the flats and gutters with sufficient joists and bearers with inch deal boarding on all sides, as described generally for the flats and gutters throughout the building, and as shown by the ½-inch scale detail drawing.

Put principal *ceiling joist*, 5 inches × 4 inches, and common ceiling joist, 3 inches × 2 inches, 12 inches from centre to centre generally throughout the roof or elsewhere, wherever so required to form the ceilings. Properly frame and notch on the plates and partitioning the several floors of *joist trimming* wherever so required. To rough strut during the progress of the building to avoid the effect of unequal settling of the walls.

The *scantlings* to the several *floors of joist* are described on the plans prepared to explain the timber work. All trimmers to be ⅛-inch addition for each joist bearing upon them. The plates throughout to be halfed at the angles. The floors of the *ground-story*, where not arched below, the one-pair, two-pair, and three-pair, are to be sound boarded with lime and hair pugging; also the floors of the one-pair halfspace, lobby, and W.C. The landings of the staircases, the joist under lead flat, and other short bearings, are to have timbers of sufficient scantling with trimmers as shall be directed during the progress of the works. N.B.—*No bond* timber or other woodwork to be laid into the walls, except where necessary for the fixing of the Joiner's work, and no plugs to be driven nearer than 6 inches to any flue. Put lintels over all door and window openings, the scantlings to be inch deep for every foot of bearing, and the full width of the wall above, and to be splayed at the ends to spring the arches from the brickwork.

Scantlings for the Partitioning.—The 6-inch partitions to have the heads, sills, posts, and braces, 6 inches × 5 inches; the filling-in pieces 6 inches × 2½ inches. The 5-inch ditto to have the heads, sills, posts, and braces, 5 inches × 4 inches (except where otherwise described and shown by drawings); filling-in pieces 5 inches × 2 inches. The 4-inch ditto to have the heads, sills, posts, and braces, 4 inches × 4 inches (except where otherwise described and shown by drawings); filling-in pieces 4 inches × 2 inches. Note. — The framing and fitting to the joints of the partitioning will be required to be carefully executed. The Contractor providing and securely fitting the wrought stirrup irons and rods with proper nuts, screws, and plates, as shown by drawings; the end of principals bearing on Yorkshire stone corbels.

JOINER'S WORK.

Beads, Stops, Fillets, &c.—Provide and fix beads, stops, fillets, tilting fillets, backings, blocks, linings, casings, furrings, bearers, bar boarding, &c., and perform all such rebating, grooving, tenoning, scribing, housing, morticing, framing, mitring, dovetailing, planing, and other labours connected therewith, as may be found necessary for the perfect performance of the Carpenter's and Joiner's work.

Floors.—Lay in the basement rooms, previously described to be boarded, inch yellow deal boarding, laid folding; and throughout the ground and one-pair floors (where not intended to be paved), inch yellow deal clean picked battens (in 5-inch widths), free from knots, and well seasoned, laid straight joint, with splayed headings, on ¾-inch rough deal battens in narrow widths laid on the joist. Lay round all the ground-floor rooms, except those of the wing building, to a width of 3 feet *inch wainscot* (in 5-inch widths) *battens*, picked clean, well figured, and laid straight joint, with tongued headings, and dowelled with oak dowels, mitred at the angles, and left dry, rubbed, and oiled. Lay the whole of the two-pair floor with inch deal clean battens in narrow widths, laid straight joint, splayed headings; and the W.C. on one-pair half space with lobby, also the whole of three-pair and attic floors with inch clean white deal, straight joint boarding.

Stabling. — Lay the harness room with 1¼-inch yellow deal boarding, laid folding on fir joists on sleepers 4 inches × 2 inches and 4 inches × 3 inches. Lay the whole of the upper floor of stabling with inch white deal boarding, laid folding. The floors in all cases to be filleted where requisite, to be mitred to all the hearths, and cut close to the walls and partitions. Lay ¾-inch rough deal boarding to form loft over part of the living-rooms of the stabling, as described in the drawings.

Windows.—Put to all the windows, except where otherwise described, of the stable building, the basement, the attic floor, and the W.C. windows opening into the shaft, 1½-inch ovolo sashes (divided as shown by the elevation), double hung with brass axle pulleys, best patent lines and spring fastenings in deal cased frames, with oak sunk and weathered sills. The best rooms to the basement to have 2-inch sashes. Note.—The wide windows are to have mullions forming side lights, as shown by the drawings, fixed with stops. Put to all these windows, not otherwise hereafter described or shown by the plans to be fitted with shutters, inch deal tongued linings and soffits, or plain headed architraves as may be directed, with 1¼-inch square framed bead and flush window backs and elbows, and beaded capping, or inch rounded window boards. Note.—The whole of the window jambs to the Kitchen Offices under the garden are to have cement jambs. (*See* Plasterer.)

Basement Windows.—The windows of the Housekeeper's room, the Still room, and Butler's room to have 1¼-inch sunk and beaded boxings, inch linings at returns, inch 2-panel bead and butt back linings, 1¼-inch bead and flush, square framed front shutters, with inch back flaps, hung complete with 3 pair of butt hinges in one height; put proper spring shutter bars, brass knobs; fit up with 1¼-inch bead and flush soffits, and 1¼-inch window boards, rounded on the edge, on proper bearers. Put between the store-rooms in Housekeeper's room, also between the pantry and dry larder, 1½-inch fixed deal ovolo sash, filled with perforated zinc, 1-inch deal beaded linings, and soffit, and rounded window board. Put between the still-room and hall-staircase, and to all the window openings from back stairs, and from the W. C. on one-pair half space, to centre air-shaft, 1½-inch ovolo sashes fixed, having inch beaded linings and soffits, glazed with Hartley's ⅛-inch thick patent glass.

2-inch sashes to Two-pair and Three-pair Floors, also the North Front Windows of the Wing Building.—Put to all the windows of the two and three-pair floors, and to the windows of the ground and one-pair floors in the north front of the wing building 2-inch deal astragal and hollow sashes, double hung, and in all respects as described before for the 1½-inch ovolo sashes. *Shutters to ditto.* Fit up all the windows of the two-pair and three-pair, except to the windows on landing over corridors, with 1¼-inch sunk and beaded boxings, inch linings at returns, inch 2-panel bead and butt back linings, 1½-inch for two-pair, 1¼-inch for three-pair, bead and flush square framed and moulded front shutters, with 1¼-inch back flaps, hung with 3 pair of butt hinges in one height and proper fastenings and shutter bars; 1¼-inch square framed and moulded window backs, elbows, and soffits, with beaded cappings. Brass knobs throughout the three-pair floor, and plain white China ditto throughout the two-pair. Put to the windows of the north front of the wing building (above described to have 2-inch sashes) shutters or linings, as set forth for the second and third-floor windows (and shown by the drawings). Inch deal grounds, 4 inches wide, grooved for the plastering, with double-faced moulded architraves to correspond with the door architraves.

Ground-floor Sashes of Honduras.—Put to the windows of the entrance-hall, the library, and dining-room, 2½-inch astragal, and hollow picked Honduras mahogany sashes in deal-cased frames (part mullioned forming side lights), with proper oak sunk and weathered sills, double hung with copper wire rope, lead weights, large brass axle pulleys, spring fastenings, and thumb lifts. Fit up the inside with mahogany beads and gilt-headed screws. Put to the whole of the windows of the one-pair floor rooms and lower corridor, and to the ante and wing room windows of both the ground and one-pair floors, 2½-inch deal astragal, and hollow *French casement sashes* (those of the front and back drawing-rooms to be in Honduras mahogany), hung with 3 pairs of brass hinges, with gilt-headed screws, to fir solid, rebated, and beaded frames, with moulded transoms and oak sunk and weathered sills. Note.—The lights above the transom to be hung to open as sashes. Ditto. The upper part of the windows, as shown by the wing elevation, to be fitted with Moore's ventilators. Put to each a best large brass espagnolette fastening, town made to sample, and Smith's patent water bar, excepting to the windows of the wing building lettered A, A; and provide for all requisite beads and fittings that may be requisite to make these windows complete. Fix self-acting brass spring catches to fasten open each of the casements. Fit up all the windows above described as mahogany with suitable double-faced moulded architraves in deal, on proper grounds grooved for the plastering, to correspond with the architraves of the doors.

Fit up throughout all the windows described to have mahogany sashes, also the wing rooms on both stories (except the back drawing-room and dining-room), with *shutters*, in all respects as described for the two-pair floor, but having the shutter fronts, and backs, elbows, and soffits of 1½-inch deal moulded, to be in accordance with door mouldings. The dining-room and back drawing-room windows are to be fitted with similar backs, elbows, and soffits, but with 1½-inch deal moulded *shutter fronts*, hung to open, and no back flaps. The soffits are to be hung or screwed up so as to be removable, for the purpose of repairing the Bunnett's shutters. Note.—The mode in which the sashes are divided by sash bars, is shown by the several drawings. The bars dividing the ground-floor double-hung mahogany sashes are to be of copper, drawn with a rebate for glazing. The furniture to all these sashes is to be omitted.

Doors.—Glazed Enclosures in Basement.—Fit up to the scullery passage, to both sides of the long kitchen passage where crossing the areas, to the back area to form knife-house, to both archways under portico opening to front areas, to the store-rooms opening from the Housekeeper's room, 2-inch bead and flush and square-framed

4-panel enclosures in deal mullioned and transomed rebated and beaded frames, forming side lights, the whole glazed with Hartley's patent glass ⅛-inch thick where fixed. The panels of the doors with $\frac{3}{16}$-inch thick ditto. To each a proper 8-inch drawback lock as shall be directed, with two 10-inch barrel bolts, and stub the stone sills for the frames. The lights above the transoms to scullery passage to be hung in centres to open with lines. The others to be prepared for hanging only. A *similar framed enclosure* for 2-pair landing archway, glazed with ground crown glass, having a morticed lock with white furniture complete. A *similar enclosure* (rebated and finished with perforated zinc to all the panels) across the lobby next the pantry, to form dry larder.

Put to the wine-cellar doors 2-inch 4-panel bead and butt and square framed doors, hung to fir proper door frames, rebated and beaded, and tenoned into the sill, and proper lock to ditto value 10*s*.

All the area cellar doors to be of inch deal ledged and braced doors, hung with 24-inch cross garnets to fir proper door-frames, as above described for the wine-cellars. Put to each an 8-inch oak stock lock. Fit up the lobby door next W.C. in front area with a 1½-inch deal 4-panel door, glazed with Hartley's $\frac{3}{16}$ inch thick, hung with 3½-inch butts. Put a good 7-inch iron-rim lock. Fit up the W.C. with a 1¼-inch 4-panel door not glazed, and hang both doors to fir proper door-frames, with 3½-inch butt-hinges as above described. Put a brass knob spring latch and 6-inch barrel bolt. Fit up the rest of the doorways generally throughout the basement 1½-inch deal 4-panel square framed, hung with iron butts to 1½-inch deal rebated and beaded jamb linings and soffits on fir proper door-frames, as before described. Proper best iron-rim locks, with brass furniture to all complete. The upper panels of the following doors in the basement are to be glazed with Hartley's glass $\frac{3}{16}$ inch thick, in addition to those previously described:—Ditto from kitchen lobby next pantry to back area; ditto from long passage to lobby between pantry and Butler's room; ditto to Servants' hall.

Fit up the external *entrance-hall doorway* with 2½-inch yellow deal, 6-panel moulded with raised panels, bead and flush square framed door hung folding to a fir proper door-frame, with moulded transom and 2-inch rebated fanlight prepared for glazing. A best 10-inch drawback lock, with brass furniture complete, and two 12-inch brass rod bolts and barrel door chain. Fit up to the *doorway lettered C* on the ground-floor plan, 2¼-inch 6-panel square framed and moulded both sides doors veneered with Spanish mahogany or Honduras, hung folding to 1¾-inch rebated and beaded jamb linings and soffits, framed in panels to match the door mouldings, with two pair of 4-inch brass butt hinges, best mortice locks, amber coloured glass, cut furniture complete to choice. Note.—The upper panels of the doors opening from the hall to stairs and lobby are to be glazed with embossed glass, value 5*s.* per foot superficial. Fit up the *doorways lettered B* on the ground-floor plan with 2¼-inch mahogany-doors, single hung, but in all other respects similar to the folding-doors, the blank doors to be flush at the back, and 2 inches thick only. Fit up to the *doorways lettered A* on the ground-floor plan (No. 5 doors) with jamb linings complete from the present rooms of the ground-floor of 19, Grosvenor-square, repaired if necessary, and in other respects made complete. Put to all these doorways proper grounds, grooved for the plastering, and double-faced deal moulded architraves, as shown by the drawings to accord with the windows. Note.—The door cappings to the dining-room to be formed by the Plasterer.

Put to the W.C. and lobby on the half space between the ground and one-pair floors, also on two-pair floors, 2-inch 4-panel moulded both sides, *deal square framed doors,* with 1½-inch rebated and beaded jamb linings, architraves, and furniture complete. The lobby, upper door panels on each floor to be glazed with rough plate glass (ground one side). The W.C. and lobby doors to the three-pair and attics to be 1½-inch deal, 4-*panel doors,* with fittings complete to suit the other finishings hereafter described. The panels to be glazed with Hartley's patent $\frac{3}{16}$ inch thick.

Folding Drawing-room Sliding-doors.—Fit up the archway between the large drawing-rooms with 2½-inch deal, 8-panel, square framed, moulded both sides, *folding-doors* suspended from the top, and fitted with wrought-iron bearer, having an edge of steel with wheels to open and close in the most complete manner in the thickness of partition. Put brass slips on the edges of the doors on both sides to guide them, and prevent their being rubbed by the sides of the partitions when being closed. Flush thumb lifts, as may be directed. The panels of the doors to be glued up in narrow widths, and cross-keyed, and divided in the middle by a bead, thus forming 8 panels to each leaf. The architrave to be formed by the Plasterer.

One-pair Folding-doors.—Fit up the doorways to the 3 drawing rooms, also the lobby and bed-room on the one-pair floor, with 2½-inch 6-panel, deal square-framed doors, moulded both sides, hung folding with 3 pair of 4-inch brass butts to 1¾-inch rebated and beaded jamb linings and soffits, framed with moulded panels to match doors, with double-faced moulded architraves on grounds complete. A best morticed lock to each of these doors, and 9-inch and 36-inch brass flush bolt to each, but not to provide for their furniture, which is to be omitted.

Two-pair and Three-pair Doors.—Fit up the doorways of the dressing rooms of the ground and one-pair floors in wing building, also of two-pair and three-pair floors, with 2-inch deal, 4-panel, square-framed, moulded both sides, doors hung to 1½-inch rebated and beaded jamb linings, with moulded architraves, 4 inches and 6 inches girth, and grooved grounds complete. The upper panels of the school-room door on the two-pair floor, and the Housemaid's closet, and to three-pair ditto, are to be glazed with Hartley's glass $\frac{3}{16}$ inch thick. The whole of these doors of the second floor are to be fitted complete with suitable best mortice locks, with plain white China furniture. The doors of the third floor similarly fitted with locks and brass furniture.

Attic-floor doors.—Put to all the attic doorways 1½-inch deal 4-panel square doors hung to 1½-inch jamb linings with 4 inches inch deal grounds wide, beaded at the edge with an OG moulding round to form architrave; each door to be fitted with a best 7-inch iron-rim lock with brass furniture complete. The upper panels of the doors opening on the staircase flat and to the back gutter, are to be glazed with $\frac{3}{16}$-inch thick Hartley's. Double rebate the jamb linings of the doorways of Mr. Taylor's room on the ground-floor and of the bed-room over, and of all the W.C. openings upon the back staircase; and hang 1½-inch deal flush framed doors with Redmund's rising 7-inch butt hinges for cloth, which is to be omitted. Provide for each of the W.C. doors generally a brass pulpit latch and bolt.

Inch *double staff-beaded jamb linings* grooved for plastering to all the archways on the several bed-room floors, forming the circular or elliptical heads in plaster. Note.—The *lifts* with fittings complete are to be omitted, but the floors are to be trimmed and boarded floors laid at all the levels.

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Stable-door.—Fit up the entrance from mews with a 2½-inch deal square framed, and braced 4-panel bead and butt door hung to a fir proper door-frame 5 inches × 4 inches, with transom rebated and beaded, and 1½-inch deal sash glazed with crown glass hung at the bottom to open inwards, with lines to guide, and stop to limit the distance. Good 7-inch copper-warded stock lock with 2 keys suitable, complete, and a stable latch.

The double archways to coachhouse to be $2\frac{1}{4}$-inch deal square framed and braced bead and butt *doors*; the upper part *glazed* as shown by the elevation with Hartley's $\frac{3}{16}$-inch thick glass. Frame, fix, and hang a jib door on one of the gates hung to fir rebated, arch-headed door-frames with suitable strong coach-house garnet hinges, bolted on the face of the doors. Provide for deal bars and hasps with padlocks and iron rod-bolts to each pair of doors, a Norfolk latch to jib door and 7-inch iron-rim lock to ditto.

The above external doors are to have inch deal ploughed and tongued and beaded battens outside framed into the cross rails.

A 2-inch bead and butt 4-panel square-framed *door* to the doorway connecting the stables and to harness-room external doorway (the upper panels of the latter glazed with Hartley $\frac{3}{16}$ inch thick). Put fir proper door frames as described before with oak stock lock complete. Put to the other lower doorways and all the doorways of the upper floor $1\frac{1}{2}$-inch deal 4-panel square-framed doors hung to $1\frac{1}{2}$-inch deal jamb linings rebated, and beaded, and grooved for plastering with 4-inch wide deal grounds to the best rooms with OG moulding round. Each door to have a good 7-inch iron-rim lock complete, and the W.C. a bolt or latch, and the staircase door small brass knocker. The *upper panels* of the best harness-room, and W.C. doors are to be *glazed* with Hartley's glass $\frac{3}{16}$ inch thick.

Fit up the loft door off landing with a 2-inch door glazed in all respects as described for the outer harness-room doorway, and the opening to shaft from passage next loft with a $1\frac{1}{2}$-inch square framed 4-panel door, upper panels glazed with Hartley's $\frac{1}{8}$ inch thick hung to jamb linings with iron-rim lock complete.

Skirtings.—$1\frac{1}{4}$-inch deal moulded *skirtings* 12 inches high on inch ploughed grounds properly backed to all the rooms of the ground-floor except the dressing-room in the wing building. Also a deal moulded surbase 4 inches deep on inch deal ground. Note.—The *skirtings* in the entrance-hall, staircase, and corridors on the ground and one-pair floors are to be worked in Martin's cement. (*See* Plasterer.) $1\frac{1}{2}$-inch *moulded skirtings* with plinth 1 foot 6 inches high on inch ploughed grounds properly backed to all the rooms of the one-pair floor, except the dressing-room in the wing building. $\frac{1}{4}$-inch OG moulded *skirting* on narrow ploughed grounds 10 inches high throughout the two-pair floor rooms; also to the dressing-rooms on the ground and one-pair floors of the wing building. Inch OG moulded skirtings 8 inches high on narrow ploughed grounds throughout the three-pair floor rooms and passages; also to the W.C. lobby on the one-pair half-space. Inch square (beaded top edge) skirting, 7 inches high, on narrow ploughed grounds to attics. Inch deal square skirting, 6 inches high, throughout the rooms and passages to the upper floor of the stable building.

¾-inch deal *match boarding* to the walls *of the harness-room*; also to the cleaning-room to a height of 5 feet only. Put to the several rooms throughout the house, offices, and stabling 1¼-inch square framed *cupboard-fronts and ends* with single or folding-doors, square framed 2 panels high as they are shown on the several plans (averaging 8 feet high), moulded top on fascia 4 inches deep, rounded corners. The framing to be moulded in those rooms where the doors and windows are so finished. A good cupboard, lock, and 3 tiers of 1-inch deal shelf on bearers to each. The *dwarf cupboards* are to be finished with a 1-inch Honduras top with 1 tier of shelf only, and to have 1¼-inch square framed 2-panel fronts and good cupboard lock complete.

Water-closets.—Fit up the several W.C. throughout the basement and stable building, also that in the attic story, with inch deal seats, risers, flaps, and frames with ¾-inch deal skirting 3 inches high round the seat. Provide for all requisite bearers, and for casing all pipes with ¾-inch deal beaded casing. The several W.C. on the ground, one, two, and three-pair floors to have inch Honduras mahogany risers, clamped flaps and frames, with moulded nosing properly wrought and French polished; the seats of sycamore; skirt round 3 inches high, and put all requisite bearers and case all pipes with ¾-inch beaded casing; ¾-inch Honduras candle shelves and boxes. Skirt round all the W.C. with inch beaded skirting 6 inches high.

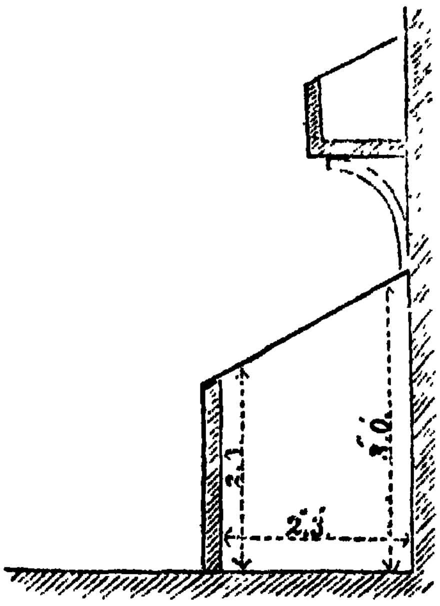
Inclose the underside of the *wash-hand basin* in the half-space lobby with inch bead and flush circular framing. Trim and prepare for *a bath* on the ground, one, and two-pair floors where shown by the plans. The pipe from the upper bath to be let into a chase or flue in the wall of the staircase. Provide for casing with inch square bead and flush framing and man-hole 9 inches deep, the front and bottom of 2 *cisterns*, 200 *gallons* each, in the bath-rooms. Provide for *casing 2 cisterns* as above of 150 gallons each; provide for casing 1 cistern of 500 gallons, and provide sufficient fir bearers for the above cisterns.

Note.—The cisterns are provided in the Slater.

Staircases.—Construct a *staircase* from the two-pair to three-pair floors, with 1¼-inch *wainscot* treads and inch risers, with moulded fronts and returns, and plain cut brackets at ends, inch string, with moulded and sunk face, reeded edge; inch wall-string ploughed for the plastering, double-bellied turned balusters, dowelled into the treads with iron; with moulded and ramped oak handrail, 3½ inches wide × 3½ inches deep, to staircase and landing, with proper iron joint screws and moulded newels. The whole strictly in accordance with the Drawing No. 26. Provide and fix in the best manner, from the basement to the attic floor a 2¼-inch Honduras mahogany handrail, wreathed and twisted as may be found requisite, with all proper iron joint screws finished dry and rubbed with oil. Provide and fix to the best staircase a 2½-inch Spanish *mahogany* picked veneered *handrail*, properly wreathed and twisted, and jointed with iron screws and finished, French polished, having a large scroll on newel, with a carved raffle in the centre.

Fittings to basement, where next described, including in the specification the several works in connexion with each; as:—Larder under staircase from ground-floor to first floor in wing building, as also staircase from basement to bed-room floor of stable building, &c., &c.

Larders.—Fit up across the end of *stock larder* a 1¼-inch deal sliding front, 5 feet high above dresser, on friction rollers, with two 1-inch deal shelves and bearers, rebated panels, fitted with perforated zinc or wire work. Inch *slate shelves*, with rubbed top and edge, on galvanized cast-iron uprights, in the *stock and hanging larder*, and deal chamfered rail at ends; deal rail and galvanized meat hooks in latter (1 doz.). Fit up the *vegetable larder* with ¾-inch slate bins, sides and back only as shown by basement plan, and by the section in margin, grooved and fitted together, having inch-deal sliding fronts. An upper row of *bins of ¾-inch slate* (bottom, sides, and back), and with ¾-inch deal sliding fronts. An inch vein marble *fish slab* at angle, as on plan, and lay on the water, and fix galvanized iron gratings to the flues for ventilation, as described on drawings.



A cold-air shaft in angle of back area, built of 4½-inch brickwork, 3 feet high, cemented, with a deal rebated frame, 2 feet 6 inches high, fitted on 2 sides with cast-iron open panelling, covered with ¾-inch patent slate slab, bedded and screwed on with red-lead cement. Form the *air-flues*, indicated by the blue lines on the plan, through the areas and larders: the sides of 4½-inch brick, fairly formed; and fix cast-iron gratings, galvanized, in the pavements, rebated for the purpose. Fit an Arnott's ventilator in the scullery flue. Inch deal dressers, on iron uprights as to larders, on 3-inch × 1½-inch front bearer, with inch deal pot-board on bearers. *Stone sink on brick bearers* (*see* Mason), with inch deal draining boards, and a proper large plate-rack, 4 feet from the ground, 3 feet high. Length as on plan.

Glaze the *upper lights* of the glazed enclosure to scullery passage with perforated glass.

Fit up the *pastry* with a 1¼-inch deal dresser, with 3-inch × 1½-inch rail, on iron bearers, as in scullery, forming a deal dovetailed flour-bin and flap at one end, and fitting an inch vein marble slab under window. A square-framed fly-wire safe, with sliding front, ends and divisions of 1¼-inch deal, 5 feet high from top of dresser, fitted with fly-wire, as described for the larder; with 2 tiers of inch deal shelf on bearers. Good cupboard lock to this safe; and inch slate shelf, and 1 shelf inch deal on bearers. Fit up the *dry larder* with 1¼-inch deal dressers, on brackets as to the pantry, and inch slate shelf across end, with inch deal shelf, 15 inches wide, above. Insert the *air gratings*, and form air passages through the walls, as described on the plan.

Kitchen.—Fit up a *deal dresser*, as on plan, 1½-inch keyed top, rounded at the corners: inch deal pot-board and bearers, 1¼-inch framed rails, runners, and fillets; 2½-inch square legs; 3 drawers with inch fronts, dovetailed and beaded; black knobs; ¾-inch bottoms and ½-inch sides; 1¼-inch cut standards at ends; 3 sunk plate shelves averaging 7 inches wide, with proper brackets and bearers, and moulded fascia at top; the drawers to have locks, and shelves to have brass hooks. 1½-inch deal dresser-top on bearer, 3 inches × 2 inches, and cast-iron brackets under the south window.

Note.—Leave flues from the hot-plate and stewing stoves next fire-place.

Men's Dressing-room. — On each side of room 1¼-inch deal *hanging closet*, 7 feet high with square framed doors hung folding, with brass spring latches and 8 iron pins in each, ¾-inch fascia and moulded top, as described in the Joiner. 4 *chests* of deal dovetailed and beaded *drawers*, 3 tier high; inch fronts, with black knob; ¾-inch bottoms, ½-inch sides, on runners and fillets, inch Honduras top, rounded at the corners; height 3 feet from floor. Fit up across the end of room an inch slate slab, rubbed top and edge 1 foot 8 inches wide, on deal bearer, 3 inches × 2 inches, on cast-iron bracket uprights (as to scullery dressers), rebated for cast-*iron enamelled basins*, each basin fitted with brass plug and chain, and 1¼-inch waste to branch into a 1½-inch main waste to drains. Lay on an inch service, with ¾-inch branch to each basin, and

¾-inch brass water-way cock. To put ¾-inch slate skirting on top. 6 inches high, to the back and ends of slab.

Knife House.—Two tier of inch deal shelf, on bearers, as plan.

Butler's Room.—Fit up the entrance to the *Strong Closet*, with a 4-inch stone sill.

Strong Room.—1¼-inch deal dresser top, and 2 tier of inch deal shelf, on bearers 1¼-inch square, framed and glazed with crown glass, sliding closet fronts, on running and friction rollers, brass spring latch fastenings. The closets below the dresser not to be glazed, and above to be 5 feet high. To put a best Barron's lock to the inner door.

Fit up across the window of pantry an inch deal dresser top, prepared for a slate sink (*see* Slater), and a range of 1¼-inch deal square framed *closets*, divided into 3 compartments, having slided fronts and spring latches, and 2 tier of inch deal shelf on bearers.

Fit up in the *Servants' hall* deal hanging closets and chests of drawers, as above described, for the Men's dressing-room; and in Housekeeper's room a 1¼-inch square-framed press the whole height of room, with 5 tier of inch shelf on bearers, and good cupboard lock, having also chests of drawers with Honduras tops, as described for the Servants' hall. The *store-rooms* to have a 1¼-inch deal dresser top, 2 feet 3 inches wide on bearers. Insert gratings in the air-flues.

Still-room.—On each side of the chimney breast 1¼-inch deal sliding closet fronts, with 3 tier of shelves above; also 1¼-inch dwarf cupboards below, with 1 shelf, brass knob latches and good cupboard locks to each, and across the room an inch deal dresser top, with 1¼-inch square-framed and beaded front to underside of dresser top, forming on one side a well, with inch flap hung to a frame, and under the window 1½-inch deal, dovetailed washers, ground and jointed with white lead, with 1-inch deal top hung at the edge to flap back over the front.

Dust-bin in front area under the steps as described in the basement plan.

Note.—The closets generally are not to have backs; the walls will require therefore to be fairly finished as the other parts of the room.

STABLE BUILDING.

(*Fittings not described in other Parts of the Specification.*)

Put 2-inch *deal rails*, 12 inches wide, axle height, against the walls of the coach-house. A 4½-inch brick wall in cement across end, and framed bricknogged partition above. A ¾-inch *service*, with ¾-inch brass water-way cock, as shown by the plan. Chase for *stacks of pipes* of 4-inch cast iron, with ½-inch deal casing from the middle gutter of roof, and from the W.C. on upper floor. Lay down the *branch drainage* from these pipes, as shown by the plans. Fit up under the stone staircase a *coal-bin*, with 1¼-inch deal framed door, and frame with deal slider at bottom. 4½-inch and 4½-inch oak chamfered and stopped *heel posts* on stone blocks (*see* Mason), tenoned into a head running longitudinally 6 inches × 4½ inches, to carry the floor of joist above. The *hall divisions* to have 4 inches × 4 inches beech bottom rails clear of the paving. Iron-cased top-rail, ramped 1½ inch, matched and beaded division, tongued joints, braced by a rail on each side in the middle of the height of 1½-inch deal. Bolt the heel post to the division, and fix an iron saddle bracket on each heel post 7 feet from the floor; also a ring at the side and bridle hook in front of each. Fit up to each stall and box complete a *cast-iron manger* fitting (Flood & Co's registered patent or other approved pattern) in 3 divisions, with front revolving rollers (*enameled*).

A hollow upright under the manger for the weights of the halter to run in, rounded at the angles. Lay down as indicated by the blue lines *cast-iron sunk gutters*, galvanized, in lengths, as shall be directed by the Architect, having a brick trapped cesspool at one end next the door with iron bell trap. Inch *water-way cock*, with service at end of stable near entrance, and provide for all the main and branch drainage shown by the plans, 6-inch branch drains, 9-inch main drain. Gratings to the *air-flues*, with deal rebated frames and sliders, as described in the plan, over each of the stalls and boxes. Fit up the boxes with *stall divisions*, in all respects as described for the stalls, 4 feet high to top of rail, with open drawn iron-bar railing on top, 2 feet 6 inches high additional. The doors to be 2-inch square-framed and braced (bead and butt on stall sides) hung to open either way, with bolt fastening as may be directed, value 10*s.* 6*d.* each. 3 *saddle brackets* and 3 harness ditto in the stables, as shall be directed. A 3-inch York stone, 4 feet × 3 feet, in the angle under the light shaft for stone to stand on.

Harness-room.—2 steps and risers with nosing of inch deal, 1¼-inch deal framed *closets*, with sliding fronts as described to the Joiner for other similar closets, 8 feet high, with runners and friction rollers. Fit up inside with *rail and harness hooks and brackets.* (Match-boarding is provided for this room, also to the best harness-room and to a height of 5 feet to the cleaning-room).

Cleaning-room.—Fit up a slate sink in a 2-inch deal frame, match boarded to underside of the top. Lay on the water with a ¾-inch service, ¾-inch brass water-way cock, 2-inch waste and brass washer. Fit up, as shown by plan, *harness and saddle brackets* on the east wall. Note.—The cleaning-room to be paved as described for the stables with brick.

Staircase.—Fit up a 1¼-inch square-framed bead and butt partition round the well of the staircase on upper floor, and hang a 1¼-inch 4-panel door, with 7-inch iron-rim 2 bolt lock complete. A small brass knocker. Dwarf-closets in Coachman's room, with Honduras tops (as described in Joiner). Provide and fix near left door a wrought-iron crane leaded into the stone landing, and securely bolted through the brickwork, as may be directed. Fit up in Helper's kitchen 2 closet fronts, complete at sides of breast (as described in Joiner).

Fit up the *W. C.* with inch-deal seat and risers, flap and frame, and put a proper Servants' pan apparatus, complete with 4-inch lead soil-pipe to the stack adjoining. Lay on the water by a ¾-inch service, with 2-inch waste to both the W. C. and sink, and put a patent slate sink and brass washer. *Case the pipes* (this stack of pipes to have cemented joints and trap at bottom). Fit up the *W. C. next seed-room* with inch-deal seat, riser, flap, and frame ; and put a proper Servants' glazed earthenware pan, syphoned, having a branch of 4-inch lead soil-pipe to join the cast-iron stack in the chase in the coach-house-wall. Lay on the water by a ¾-inch lead service complete. (This stack to have cemented joints and trap at bottom.)

Seed-room.—A 1¼-inch deal dovetailed corn-box, divided into 2 compartments, 6 feet long × 20 inches wide, 3 feet high, with clamped top, and one-third of the front hinged to flap down. 3 bins for seed against partition, as shall be directed, with ¾-inch deal sliding fronts.

Note.—The doors, windows, and glazing, skirtings, and floors, are described in the general specification with separate trades ; also the shafts and horizontal lights, the chimney-pieces and Mason's and Bricklayer's work.

A proper patent *slate cistern*, to contain 300 gallons, over the W. C. by the centre shaft, having the sides and bottom of sufficient thickness, properly grooved and jointed with red-lead cement, and bolted with iron sheathed in a lead pipe. Lay on the water by a 1¼-inch service from the mews, with 1½-inch standing waste and ball-cock complete. Put an inch deal ledged top on ditto. Also a cistern, to contain 150 gallons, over the water-closet at the end of the passage.

Plasterer in Stable.—As usual.

Smith's Work to Stables.—Wrought framed *guard-bars* to the harness-room fanlight and door, and to the windows of the cleaning-room and stables, having ⅝-inch drawn round bars, with ½-inch × 1½-inch top and bottom rails, flanged into the brick jambs of window. Provide and fix a wrought-iron *crane and wheel*, as before described. 2 stacks of cast-iron *rain-water pipes*, with heads complete, from the front and back gutters to the drains in mews and area. One stack complete from the centre gutter, into which one of the W. C. is to branch, with a 4-inch lead soil.

Note.—The stacks, into which the W.C. branch are to be cemented at the joints, and to have small brick traps at the bottom, where entering the drains. The whole are to be of 4 inches net inside diameter, properly secured by bands and wall-hooks.

PLASTERER'S WORK.

To be executed in the most workmanlike manner, with fresh-burnt *chalk lime* and clean *sharp sand*, and lath and ½-laths to the ceilings. The *cement* used is to be of the best quality of their respective kinds, and mixed in the proportions usually adopted for the nature of the work :—Roman cement 1 to 2 of sand; Portland cement 1 to 2 of sand.

Bracket out and properly prepare for, in the most secure manner, the several projections shown to be intended by the drawings for forming the coves and block cornices. Form all the requisite *splays*, *arrises*, *jambs*, and *soffits* throughout; make good all defects, and leave the whole perfect at the completion.

Basement Cement Work.—Form in Roman cement, to a height of 4 feet, the walls of the whole of the basement and kitchen offices, except those of the Housekeeper's and Butler's rooms; beaded where joining the plastering; also the walls and arched soffit to the lobby under the portico and to the W. C. and lobby adjoining, under the street pavement. Fairly form the splayed jambs to the openings of the bridgeways for light. Form in Roman cement the whole of the door and window jambs not intended to have linings or shutters. Form in Roman cement the angles and jambs of all the archways, also the angles of the chimney breasts. Roman cement skirting, ½-inch projection and 7 inches high round the Housekeeper's and Butler's room.

Render, flote, and set the walls of the back staircase to a height of 4 feet from the basement to the attic floor, beaded where jointed with the plastering. As also the walls and soffit of strong room, and the *walls and soffits* to the open arch space under the stable building on all sides. Render with Roman cement, as high as the coping stones, the garden areas and all sides, and the soffits of landings over the long passage. Render, flote, and set, and thrice colour, the parts of the wall and soffits of arches throughout the basement and kitchen offices, and back staircase, not described to be in Roman cement.

Lath, plaster, flote, and set and whiten the ceilings.

Martin's Cement.—Form in Martin's cement, properly dubbed, the moulded dado and skirting of hall, entrance-hall, lobby, staircase, and corridor; also the mouldings forming panels on the walls of the staircase, dining-room, and drawing-rooms, within the height of 5 feet, the rest being formed in plaster; and form in Martin's cement the angles of all the chimney-breasts, or other projections, throughout the several floors of the house, the moulded architrave of archway between large drawing-rooms, the angles of the pilasters forming the arched corridors on the ground and one-pair floors; also the moulded architrave to the doorways and windows, as high as the spring of arches in the corridors.

Lath, plaster, flote, and set and finish with distemper the ceilings of the several floors throughout the rest of the house. Note. —The ceilings of the dining-room and the whole of the one-pair floor are not to be distempered.

Cornices.—Run round the ceilings of the rooms, passages, and lobbies of the several floors, also the ceilings of both staircases, the *moulded plaster over cornices* shown by the several drawings, properly bracketing for the projections, and securely fixing the blocks. Provide for and finish in the best manner the several enrichments shown to be required, a previous model to be submitted for the approval of the Architect. Run on the face of the ceilings the mouldings shown by the drawings to be required for the paneled compartments of the dining-room and drawing-rooms. Form in plaster the frieze and moulded entablatures to the doorways of the dining and drawing-rooms shown to be so finished.

Walls.—Finish *trowel stucco* in the best manner for painting the walls of the whole of the ground and one-pair floors, also to both of the corridors and to the walls of best staircase. Form in the best manner in plaster the moulded imposts and archivolts to the walls and ceilings of the corridors. Render, flote, and set, or lath, plaster, flote, and set (as the case may be) the whole of the walls and partitions of the 3 upper floors and of the back staircase and lobbies adjoining.

Render generally throughout the *backs and boxings of windows.*

Run in plaster the *circular heads* of the archways of back stairs beaded.

Lath, plaster, set, and whiten the insides of all the light shafts.

Portland Cement Work externally.—*Dub out* or otherwise form in the best manner by projecting the courses of brick or by the insertion of York stone core sufficiently tailed into the walls the whole of the string courses and rusticated work; the window dressings, pilasters, and cornices, with enrichments; the moulded chimney-caps, and other parts of the external fronts shown to be finished in cement. Execute in the most workmanlike manner with the best Portland cement mixed in the proportion of 1 of clean sharp sand to 2 of cement, the whole of the external work shown to be so finished, forming in the most careful manner all the *moulded projections, mitres, arrises, and throatings, string courses, rusticated work, window dressings, pilasters, and entablatures, cornices, and chimney-caps.* Carefully secure by *galvanized iron cramps* the several parts of the cast Corinthian caps and blocks to cornices. Face the basement of the south front as also the area walls in Grosvenor-square on all sides as high as the stone balustrading with Portland cement. Run the *sailing course and fascia* to the wing building in Portland cement. Run the *coping* to chimney stacks in Portland cement, and fix on each flue a full-size cement pot properly flanged. Note.—The kitchen flues to have extra size pots 18 inches × 14 inches.

Finish in Portland cement the walls of the area above the flat of the best staircase. Form the cornice and keystones to arches of stable building (south front) in Portland cement. Run the sailing course and fascia on party fence walls to both sides of garden in Portland cement. Form in Portland cement the flat over the portico with a proper current, and shoot through walls to water-pipe. The whole of the cement work is to be worked clean and free from stains, as it is not intended to be coloured.

SLATER'S WORK.

Face the kerbs of roofs with small Bangor countess slating, as described hereafter for the other roofs. Cover the *roofs* of the house and stabling with the best small Bangor countess slating, with 2-inch laps and 2 cut copper nails to each slate. Put $\frac{3}{4}$-inch patent slate self-faced with tongued joints and slate fillets, secured with red-lead cement, as a covering to the knife-house. Cut the slate into the walls on 3 sides, so that no flashing be required.

Put $\frac{1}{4}$-inch *slate cresting* 4 inches wide, bedded under the jointing of the stone copings to all the back areas. The copings not to project beyond the face of brickwork. Fit up in the *pantry and Housemaids' closets* on the two and three-pair floors ¾-inch patent *slate sinks* with rubbed inside face and edges, grooved and jointed with red lead cement, each sink to have a brass washer, trapped or bell grate. The 2 latter to have ½-inch rubbed slate skirting at backs and ends, 8 inches high. Provide and fix upon sufficient bearers as shall be considered best during the progress of the works, proper *patent slate cisterns* to contain as follows: *Basement.*—To scullery passage, 500 gallons; to W. C. in front area and still-room, 150 gallons; to Men's dressing-room, 150 gallons; to W. C. in scullery, 60 gallons. *Ground-floor.*—To bath-room and W. C. at end of wing building, 300 gallons. *Two-pair floor.*—Ditto in bath room, 200 gallons. *Attics.*—Ditto over W. C. an lobby, 500 gallons. Also 1 cistern to contain 200 gallons for water-closet of one-pair, half space. The large cisterns to have 2-inch bottoms and 1½-inch sides, and small ditto 1½-inch bottom and 1¼-inch sides, properly grooved and jointed with red-lead cement, and secured by iron bolts sheathed in lead pipe.

Put ¾-inch *slate on top of skylights* of staircase, grooved and tongued at joints with slips.

Note.—The cisterns and sinks to the stables have been previously described under a separate heading (*see* p. 644), as are also the whole of the slate fittings throughout the basement.

PLUMBER'S WORK.

Lay on water from the main in Grosvenor Square with 1¼-inch service to the several cisterns described above. Put ball-cocks to each, 1½-inch standing trumpet-wastes, and perform other requisite Plumber's work to make the cisterns complete. Lay on water to each of the sinks throughout; also to the washers in the still-room and dressing-room from the nearest cistern by ¾-inch lead services, with ¾-inch brass water-way cocks, 1½-inch wastes, and brass plugs with chains, the wastes to be trapped before entering the drains.

Lay on water by ¾-inch service and cock to the fish-slab and larder archway.

Water-closets generally.—Lay on water to each of the W. C. throughout by ¾-inch lead services, to put 4-inch lead branch soil-pipes, D traps, 5-inch upright soil-pipes into drains, and other requisite Plumber's work to make the W. C. complete. 4-lb. lead safes to closets above ground-floor, with small D traps and pipes into the traps of closets. Fit up the Servants' W. C. on the attic floor and in the basement with common pan apparatus. Fit up the 2 W. C. on the ground and one-pair floors in the wing building with the best valve apparatus, with large white oval basins. Fit up the other W. C. on the bed-room floors with bed pan apparatus, with large white oval basins.

Fit up in each of the W. C. where shown by the drawings, a *glazed earthenware sink*, Rettie's patent large size (about ⅛-inch and 10 inches); lay on water by ¾-inch services, with ¾-inch brass water-way cocks, 1½-inch wastes and brass washers, plugs and chains.

Lay a safe of 4-lb. lead turned up 4 inches entirely over those parts of the dressing-rooms shown to be trimmed for baths; also to the bath-room in the two-pair floor middle-room.

Put a 4-inch *lead soil-pipe* in flue in the staircase wall, 9 inches × 5 inches.

Put in the angle of the washing lobby, as shown by the plan, a best large blue earthenware hand-basin, to choice. Lay on water by a ¾-inch branch-service. Put a 1½-inch waste, with ivory knob lever handles.

Roofs.—To lay the whole of the *gutters* and *flats* generally to the house and stabling, with 7-lb. lead turned up 6 inches against the parapets and 9 inches over the learboarding and kerbs of skylights, with 1½-inch drips, 1½-inch fall in 10 feet at least, and deep cesspools. Flash with 5-lb. lead, 4 inches wide, properly dressed and fastened with wall-hooks, and stepped to the slopes of the roof wherever required, dressed 5 inches upon the slating to the parapets, chimney-stacks, and party-walls. Put 6-lb. lead to the hips and ridges, 22 inches wide, properly lapped and secured with lead-headed nails. Dress 6-lb. lead on tops, dotted down, cheeks and apron-pieces of dormers, also over the kerbs of skylights, and light and air-shafts, and to all chimney-gutters, in all cases to be about 5 inches on the face of the slating or otherwise. Dress 6-lb. lead, 15 inches wide, over the angle formed by the kerb roof. Flash with 5-lb. lead on glazed metal skylight of long passage in basement, and to covered way to larders.

Put complete stacks of (4 inches net inside diameter) *cast-iron rain-water pipes*, with large cast heads from the roof of the house and stable building. Also 2 stacks from the W. C.'s on the bed-room floor of stable building, with cemented joints; also a short stack from the bath-room at the north end of the wing; also from the garden arched flats to the several areas at the back of house, 3 inches diameter; also from the front portico of 3 inches diameter; each stack to have proper *lead shoots* from the gutters to the heads, and small brick cemented *cesspool* at the bottom, and to be securely fastened to the face of the walls by bands and wall-spikes.

Put 3-inch semicircular *eaves guttering* and pipe, with cast head, from the slate roof of the knife-house in back area.

Provide all requisite lead-headed nails, solder, wall-hooks, holdfasts, or other materials. Perform all labour in joints or otherwise, for executing in the most workmanlike manner the whole of the Plumber's work; also provide all lead required by the Masons for joggling, or otherwise, for the Smiths; for running with lead the flanges of girders, and for any purpose required in the performance of the works comprised in this specification.

The *lead* to be the best pig lead, properly milled and free from all defects.

Note.—The old lead to be credited (none to be re-used).

GLAZIER'S WORK.

Glaze with $\frac{1}{8}$-inch thick *Hartley's patent* the whole of the windows of the stable building, south front, and the kitchen offices opening into the areas at the back of the house, and to the window of pantry, and the whole of the horizontal sashes at the bottom of the light-shafts, except those in the wardrobe and bath-room of the second floor (which are to be of best ground crown glass); also the fixed sashes opening from the back stairs to the light-shaft.

Glaze with $\frac{3}{16}$-inch thick Hartley's patent such *upper panels of the doors* generally throughout the building, as shall have been described to be so finished in the Joiner, or elsewhere on the drawings.

Glaze the *horizontal sashes* on top of light-shafts with horizontal glass $\frac{1}{8}$-inch thick. Glaze the *covered passages* to kitchen and larders with $\frac{3}{16}$-inch thick Hartley's patent, and with *rough plate* the bottom of the light-shaft over the lobby and crockery closet. Glaze with rough plate, ground one side, the upper door panel from the corridor to the lobby leading to the back staircase on the ground, one, and two-pair floors; and with rough plate, ground one side, the risers of the entrance door-steps from Grosvenor Square and back garden.

Glaze the folding hall doors (upper panels) with *embossed glass* 5*s.* per foot superficial. The fanlight over the entrance folding-doors with 1 sheet of the best *British plate* glass. The whole of the windows of the ground (except the bath-room) and one-pair floor windows, with the best British plate glass in squares as shown by the drawings.

Glaze the whole of the front windows of the second and third floors with 21-ounce patent plate glass in squares as shown by the drawings, and the other windows of these stories with best crown glass. The whole of the windows of the basement, the attic floor, and of the stable building (not otherwise described) with best crown grass. The skylight over the back staircase with stout 21-ounce horticultural glass. The skylight over the principal staircase with rough plate glass bent to the required moulds.

Execute the whole of the glazing with the best putty in the most workmanlike manner, and clean all the windows, repair damaged puttying or glazing, and leave all perfect at the rendering up of the works.

PAINTER'S WORK.

Materials and Labour.—Use the *best white lead* and linseed oil, and perform the Painter's work in the best manner, properly priming. Paint 4 times in oil colour the whole of the *external wood and ironwork* usually painted (to house and stable building), sashes and frames *chocolate.*

Paint 4 times *in oil colour to choice* the whole of the *internal* Joiner's work and ironwork generally to house and stable building *except* the one-pair floor, which is only to have the 2 first coats. The ground-floor to have an extra flatting coat. Paint 4 times in oil and flat the whole of the walls of the ground-floor excepting the entrance-hall, lobby, and best staircase. The moulded panels of the walls of the dining-room to be party tinted, as shall be directed. Paint 4 times in oil, and flat party tinted the library and dining-room *cornices.* The whole of the Joiner's work of the two-pair and three-pair floors are to be finished *flatted* (drab or otherwise), making together 3 coats and flat.

Note.—The painting to the *walls* and distempering to the *ceilings* of the whole of the one-pair, as also to the hall, lobby, and staircase, are to be entirely omitted. (The Joiner's work, as before described, is to have 2 coats only).

Paint 4 times in oil the *cement walling* 4 feet high wherever so described in the Plasterer.

Ceilings.—Properly prepare with size and finish in distemper the whole of the ceilings ,of the ground-floor, the two and three-pair ditto. Whiten the remainder of the ceilings and the insides of all the light-shafts throughout the house, offices, and stable building.

Colour in the best manner, strongly sized, the whole of the basement, *walls*, and *soffits* of arches to offices where not otherwise described to be finished.

Leave the whole of the painting and distemper and colouring to walls clean and free from stains at the completion of the work.

Note.—Care to be taken that the Hartley's glass have the flutes *upright* and all *one way*, and picked evenly faced.

SMITH'S WORK.

The *cast iron* is to be of the best soft, grey metal, to be cast free from blemish or other defects, and proved before being fixed. The *wrought iron* is to be the best English, well hammered or rolled, and free from flaws.

Provide and properly fix, leaded into 5-inch and 4-inch York stone templates at each end, *cast iron girders* under part of the stable building, as shown by the drawings, flanged at each end and in the centre, supported by a 6-inch cast-iron pillar on a 5-inch stone template and brick pier. Provide and fix, properly leaded into 4-inch and 5-inch York *stone templates*, sunk for the flanged end, *rolled plate-iron girders* to carry the brick arches over the kitchen offices, and the several framed floors, partitions, and roof, as shown by the drawings. The girders to be properly plated at the joints with top and bottom flanges and angle iron; the whole being of ½-inch iron, riveted together securely, and to have uprights or stiffening pieces of T iron at distances of 3 feet apart.

Put *shoes* to receive the ends of the binding joists or trussed bearers where bearing on the girders.

Provide and fix rolled *plate-iron trusses* at the sides of the fir beams of the several floors throughout the building (as shown to be finished). The iron truss to be of inch iron bolted every 2 feet through the two 6-inch fir flitches, as shown by the drawings, with ⅝-inch bolts. Provide also for trussing in a similar manner, but lighter, the beams under the best staircase skylight; also the ridge and bearing beams of the front roof.

Provide and fix in the best manner the several *wrought-iron straps* and *king rods* with cast heads to the trusses of the roofs, as required by the drawings, and provide for suspension rods to partitions 3cwt. of wrought iron in bolts, and all proper nuts, plates, and screws. *Cast-iron mullions* to the ground and one-pair windows of back front, also *cast-iron girders over all the windows* of the back front properly leaded into 4-inch stone templates, with shoes to receive the ends of the binding joist.

Provide and fix the *plate-iron girders* shown by the drawings to carry the best staircase landing, flanged and leaded into 4-inch stone templates on the staircase; 14-inch wall and a cast-iron girder 9 inches deep, the upper flange and web 1¼ inch thick, the upper flange 6 inches wide, the lower flange 9 inches × 1½ inch, to carry the 9-inch brick wall in the back staircase from the two-pair floor upwards.

Provide and fix in the best manner over the principal staircase and a back staircase, *a cast-iron bar skylight*, fitted and screwed into a wrought-iron sill and kerb at top (a pattern bar to be made for approval). Fit both these skylights with perforated kerbs and deal flaps, with ¾-inch slate tops, as shown by the detail drawings.

Hang a portion of the soffit of the back staircase skylight with lines, pulleys, and balance weight. (Provide *25s.*) Note.—The lead works on kerbs to be dressed over to the inside to form a gutter for condensed water, with pipe to lead flat.

Hall and Back Staircase Railing.—Provide and fix to the hall and back staircases ¾-inch square iron balusters—the first to have 1 baluster to a step, the latter 2 balusters to each step—leaded into the ends of the stone steps, with wrought top rail fitted to Honduras handrail, and a strong newel at the bottom. A ¾-inch square bar wrought-iron railing, with top rail and newel to area steps, let into the ends of the steps. Note.—The best staircase rail to be omitted.

Guard Bars to Windows of Basement.—Fit to the windows throughout the kitchen offices where there are no shutters, wrought-iron framed guards—viz., ¾-inch round iron, 5 inches apart, with top and bottom wrought rail, 1½-inch × ½-inch, fixed into the jambs of the windows. Similar ¾-inch guard bars screwed inside to the glazed enclosures to passages where crossing the areas.

Proper drawn iron-bar skylights in frames, rebated for glazing, with V iron gutters supported by stone corbel in the long passage, and on 3-inch cast-iron pillars on each side of the covered way to the larders; and otherwise complete these skylights by flashing, &c., as shall be directed, with 3-inch water-pipes and heads.

Note.—None of the skylights to be galvanized.

Provide the several *cast-iron galvanized supports* and brackets to the fittings generally throughout the basement, as directed in a separate part of the specification; and the several *cast-iron gratings* shown by the basement plan to be required for the cold air under ground channel under larders; also the several gratings required to give a free current of air under all the basement floors, to be fixed in the external walls; also the *gratings* for the mouths of the air-flues in larders and scullery, and elsewhere described on the drawings; the whole to be galvanized.

Provide and fix as shall be deemed best during the execution of the Contract, *Bunnett and Co.'s Patent Revolving Iron* shutters, with apparatus complete, to the windows of the dining-room and back drawing-room.

Provide and properly fix with plates and nuts the tenon rods-bearing bars required to carry the portico entablature and arched soffit.

Provide for 6-inch cast-iron bell traps in each of the areas let into 3-inch York stones, properly rebated and fixed over the brick cesspools to drains. Provide for a cast-iron grating, galvanized, in each of the cesspools throughout the roofs (or circular lead roses).

Note. — The iron door and frame to strong room is to be omitted.

Note.—The Contractor is to provide all the requisite moulds and patterns for the cast-iron work, which is to be proved before being fixed.

Note.—The whole of the plate-iron girders and trusses are to be procured from *Messrs. Mare's, Blackwall, or some other London works.*

Note.—One of the trussed fir bearers is to be fitted as a pattern and proved before the others are ordered.

General Clause as to the Use of the old Material from the present House in the erection of the new House.

The sound *old bricks and timber* generally may be adapted and re-used, provided they are of the full scantling described by the specification; but if there be mortices or other defects to weaken the efficiency of the timber, an extra size will be required, such as shall, in the Architect's opinion, meet the particular requirement. The *old boarding* from floors, flats, and roofs, may be relaid where sound for the flats and roofs of the new building. No old lead to be re-used. The doors, windows, and fittings generally, are to be removed, *except those comprised in the schedule annexed.*

Specification for the Erection of a HOUSE, No. 28, UPPER GROSVENOR STREET, LONDON. J. P. GANDY, *Architect.* 1826-7.

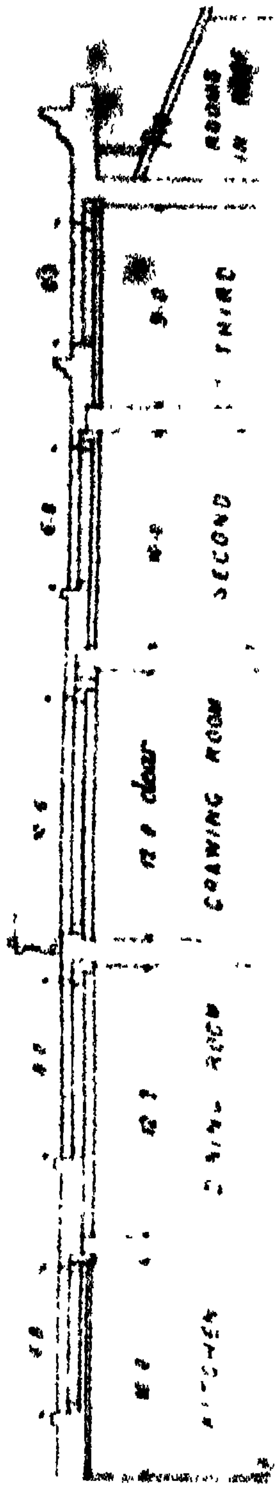
THE Contractor is to take down the present house and offices, and so much of the party-wall westward of the same as may be necessary to repair and rebuild the same, so as to be in conformity with the Act 14 Geo. 3. c. 78. To excavate the ground for the back offices, area, &c.; empty and cleanse all drains and cesspools, and build new, where necessary to render the drainage complete; and to cart away all superfluous earth and rubbish. To erect a hoard in front of the street, and remove the same when the building is completed. The east party-wall is to be wholly taken down and rebuilt; and the west ditto so far taken down and rebuilt as to make it in all respects in conformity with the Act. The adjoining premises to be shored, and all damages committed thereto to be effectually made good. The brickwork is to be built with good, sound, well-burnt stocks, of an uniform colour, laid with a neat close joint and jointed; using such of the old bricks only as are sound and hard; the front is to be faced with second malms above the entrance-floor, and gauged arches over the windows. The door and window-frames to be bedded and pointed in good lime and hair. Cement chases to be cut in the wall of the adjoining house, where the new joins the old work. An arch to be turned over the wine-cellar, one brick thick, and ditto under the steps of the entrance. The flues are to be 14 inches × 9 inches in the clear, pargetted and cored, and the old chimney to be refixed, with new, where necessary. The shafts to be carried 3 feet above the roof.

SLATER.

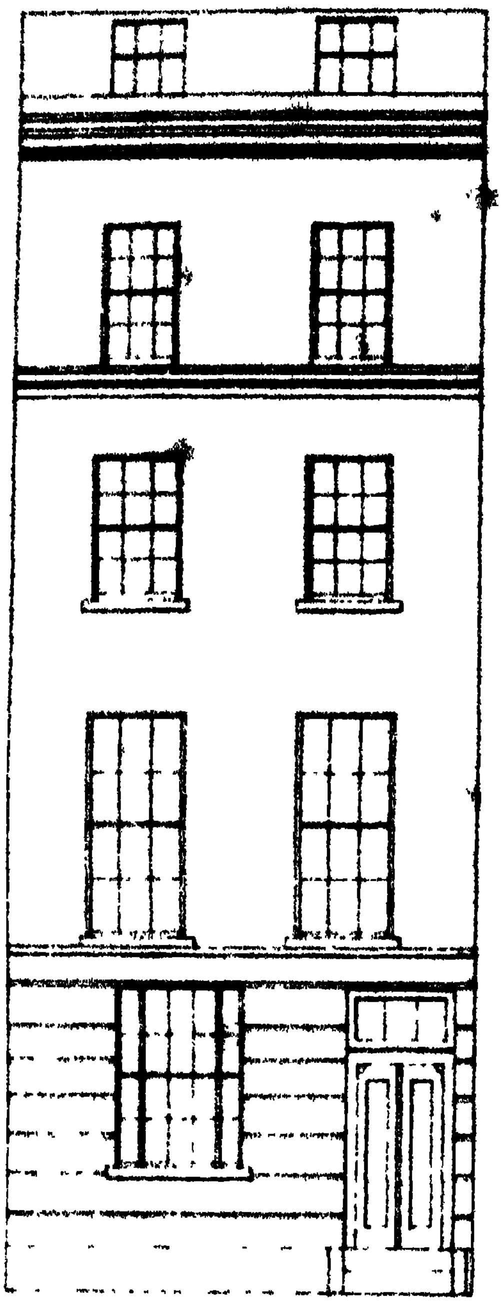
The roof is to be covered with countess slating, on battens, properly nailed, with two copper nails to each slate, with 2½-inch bond, and the eaves to be double, the slates squared, and the joints properly broke.

CARPENTER.

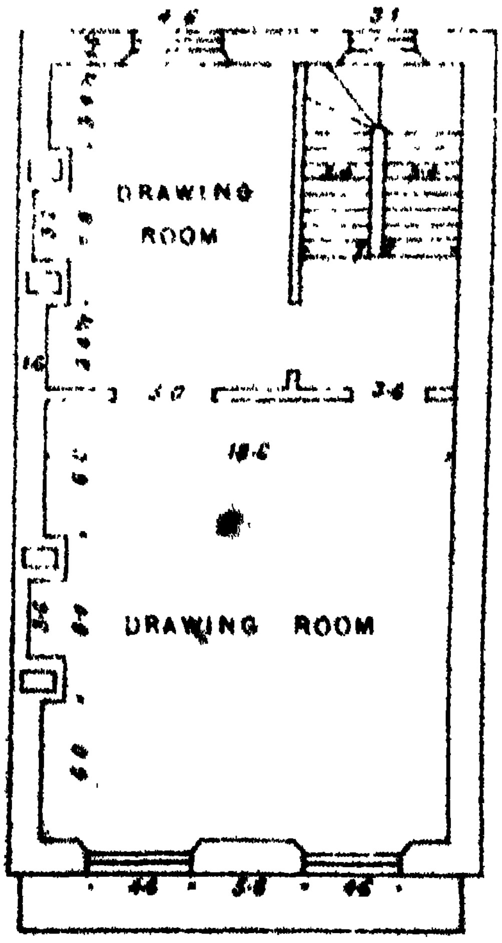
To frame and fix a span roof, kerbed back and front. To properly frame the several floors and partitions with all necessary ties of iron chimney-bars to each chimney. To truss the ¼-partitions of the ground and one-pair floors. To provide and fix all proper

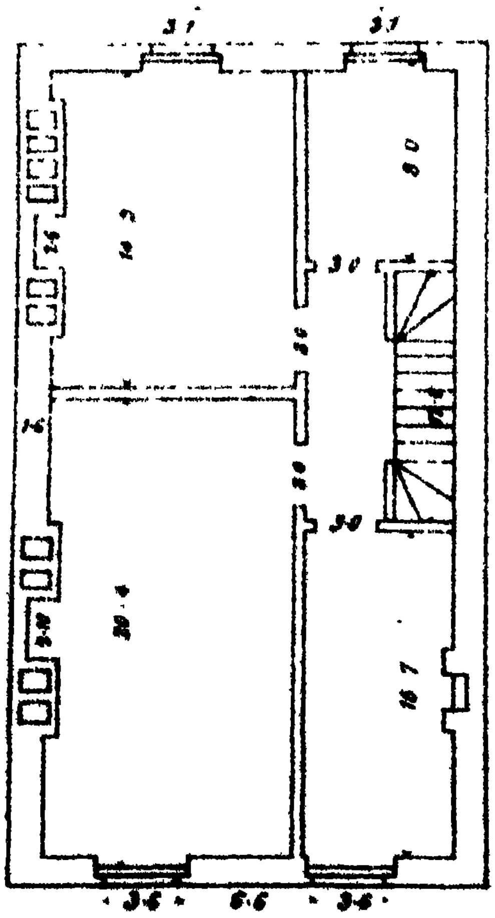


HEIGHT OF THE HOUSE FLOORS.



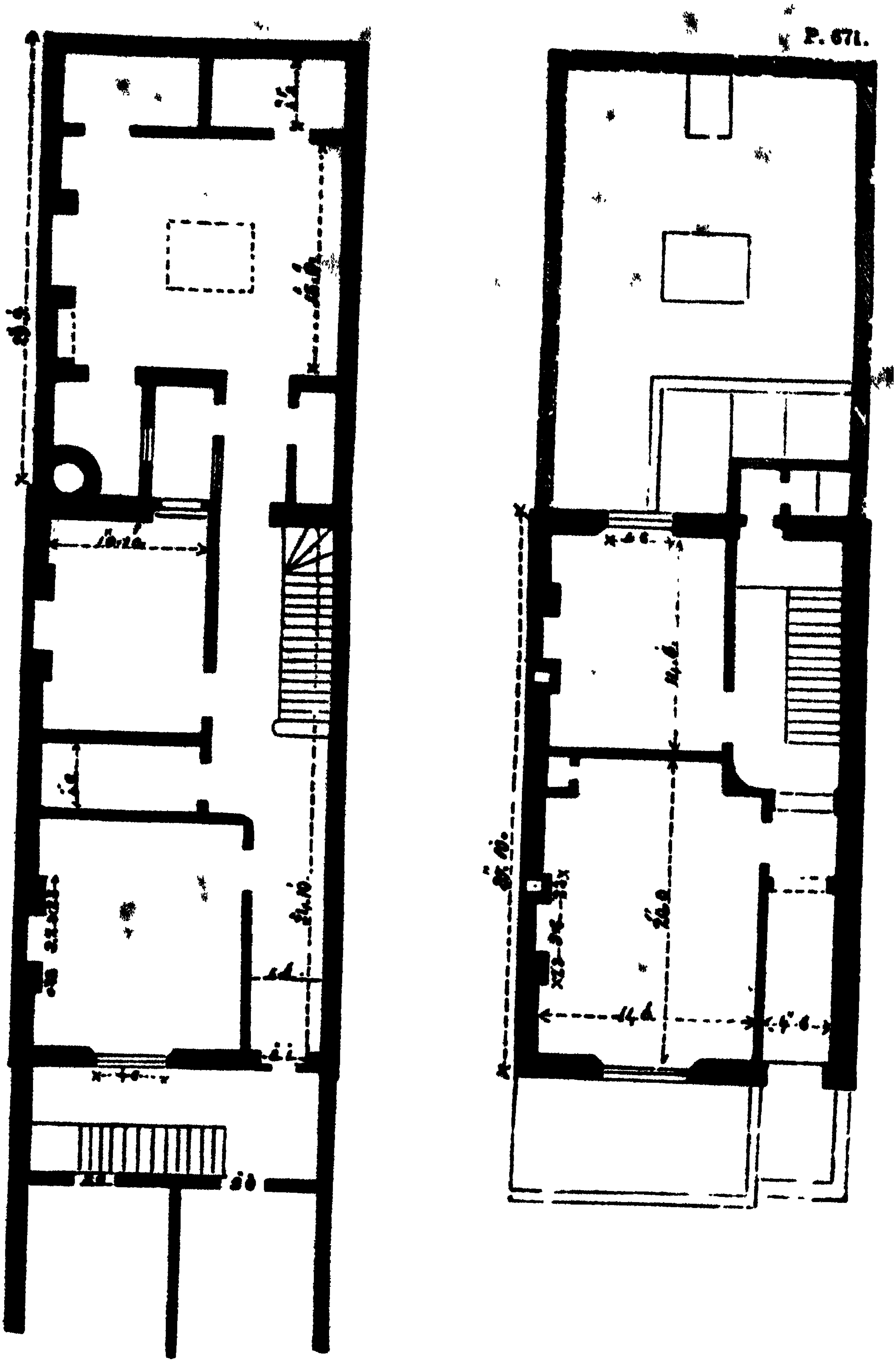
FRONT ELEVATION





THIRD FLOOR

P. 671.



House No. 28, Upper Grosvenor Street.

J. P. GANDY, ARCHITECT.

bond plates under each floor, lintels, templates, wood bricks, &c., and all centring for apertures. To frame and fix a strong floor of joists, 10 inches × 2¼ inches, over the kitchen, and trimmed for the skylights, and covered with inch yellow boarding for lead; as also to flat over passage, &c., all with proper fall, &c. To lay 1¼-inch gutter-board and strong bearers to roof, with proper fall and 9 inches wide in the narrowest part. The new timber is to be Memel or Riga. All the joists to be strutted firm, not more than 6 feet apart.

Scantlings.—The floors over the dining-room and drawing-room to have each girder 12 inches × 8 inches, sawn, reversed, and bolted with ¾-inch bolts (No. 4) to each, with nuts, screws, &c., complete, and a cast-iron flitch, 8 inches × 1 inch between. Each to have No. 3 binders, 9 inches × 3 inches, and bridging-joists, 8 inches × 2¼-inches; ceiling joists 3 inches × 2 inches; the other floors to have joists 11 inches × 2¼ inches; trimmers, 11 inches × 3 inches. The floors to the Housekeeper's and Butler's room to have joists, 6 inches × 2¼ inches, on sleepers. The roof to have rafters, 4 inches × 2 inches; and No. 3 floors to be sound boarded, and the external walls of the same floors to be battened.

JOINER.

The attic-floor, third-floor, and basement, to be fitted up and floored as at present, with the best materials of the present house, as far as they will go, and otherwise with new. The whole of the rest of the Joiner's work to be done with new deals, of good quality, from the Baltic, sound and well seasoned, without shakes, sap, or loose knots; no rafters, joists, quarters, &c., to be more than 12 inches from centre to centre. The two-pair floor to be laid with inch deal, straight joint, edges nailed; all the rest on the first and ground stories with 1¼-inch yellow battens, straight joints, edges nailed, and mitred borders to the slabs. Skirting and other grounds to be fixed everywhere. Inch torus skirting in the second-floor and staircase, and rebated plinth and moulding in the first-floor and ground-floor, fixed in a workmanlike manner; deal-cased frames, oak sunk sills, 2-inch deal moulded astragal and hollow sashes, double hung with patent lines, boxed shutters and architraves, with proper fastenings; the shutters to be 1½-inch, in 2 heights; 1¼-inch splayed and moulded soffits, backs, and elbows; framed and fixed splaying back-linings, &c., complete, to correspond. All the doors on the 3 floors to be 2-inch moulded both sides, hung with 4-inch brass projecting butts, mortice lock on each, value 20*s*., and the folding-doors in the drawing-room to have No. 2

bond plates under each floor, lintels, templates, wood bricks, &c., and all centring for apertures. To frame and fix a strong floor of joists, 10 inches × 2¼ inches, over the kitchen, and trimmed for the skylights, and covered with inch yellow boarding for lead; as also to flat over passage, &c., all with proper fall, &c. To lay 1¼-inch gutter-board and strong bearers to roof, with proper fall and 9 inches wide in the narrowest part. The new timber is to be Memel or Riga. All the joists to be strutted firm, not more than 6 feet apart.

Scantlings.—The floors over the dining-room and drawing-room to have each girder 12 inches × 8 inches, sawn, reversed, and bolted with ¾-inch bolts (No. 4) to each, with nuts, screws, &c., complete, and a cast-iron flitch, 8 inches × 1 inch between. Each to have No. 3 binders, 9 inches × 3 inches, and bridging-joists, 8 inches × 2¼-inches; ceiling joists 3 inches × 2 inches; the other floors to have joists 11 inches × 2¼ inches; trimmers, 11 inches × 3 inches. The floors to the Housekeeper's and Butler's room to have joists, 6 inches × 2¼ inches, on sleepers. The roof to have rafters, 4 inches × 2 inches; and No. 3 floors to be sound boarded, and the external walls of the same floors to be battened.

JOINER.

The attic-floor, third-floor, and basement, to be fitted up and floored as at present, with the best materials of the present house, as far as they will go, and otherwise with new. The whole of the rest of the Joiner's work to be done with new deals, of good quality, from the Baltic, sound and well seasoned, without shakes, sap, or loose knots; no rafters, joists, quarters, &c., to be more than 12 inches from centre to centre. The two-pair floor to be laid with inch deal, straight joint, edges nailed; all the rest on the first and ground stories with 1¼-inch yellow battens, straight joints, edges nailed, and mitred borders to the slabs. Skirting and other grounds to be fixed everywhere. Inch torus skirting in the second-floor and staircase, and rebated plinth and moulding in the first-floor and ground-floor, fixed in a workmanlike manner; deal-cased frames, oak sunk sills, 2-inch deal moulded astragal and hollow sashes, double hung with patent lines, boxed shutters and architraves, with proper fastenings; the shutters to be 1½-inch, in 2 heights; 1¼-inch splayed and moulded soffits, backs, and elbows; framed and fixed splaying back-linings, &c., complete, to correspond. All the doors on the 3 floors to be 2-inch moulded both sides, hung with 4-inch brass projecting butts, mortice lock on each, value 20*s.*, and the folding-doors in the drawing-room to have No. 2

12-inch brass flush bolts in addition. All to have moulded architraves, both sides, to correspond with the window-shutters. The entrance doorway to have pilaster decorations, 4-paneled moulded, 3 divisions, with drawback lock, value 20*s.*, bolts, &c., and a metal light over as shown. The external doors in the basement to be 2½-inch bead, butt and square, with the old fastenings repaired and refixed.

Staircase to have 1¼-inch yellow deal moulded steps, risers, and fir carriages, 6 inches × 4 inches, mitred, to cut the string up to the second-pair; and inch ditto to close string up to the attics, with proper wall-string and wreath-string; deal turned balusters to a pattern, 2 to each step, let in newels, &c.; neat Spanish mahogany handrail, wreathed up to three-pair, and deal ditto thence up to the attics, with square banisters. To fit up two water-closets, the one with cedar, the other with mahogany seat, riser, and flaps; one on the ground, and one under the stairs on three-pair, with proper cisterns, each to contain 7 feet cube, linings, &c.; and enclose spandril on the two-pair floor for ditto, and lobby on the ground-floor, with 2-inch deal framing, as shown on the plan. Fix a proper lantern-light over the kitchen, boarded top, covered with lead, and a skylight over the pantry, &c. The old dressers, closets, &c., to be refixed. The pipes in the W. C. to be cased with inch deal wrought, the front to be hung with butts. The Servants' privy in basement to have deal seat, riser, &c.

PLASTERER.

All the work in the attics and kitchen to be laid work. The ceilings whitened, and the walls coloured. Cement skirting 7 inches high round the kitchen, &c., and wherever paved. All the work on the first, second, and third floors, to be floted, and the ceilings whitened; a neat plain cornice round the second and third floors. A cornice, with 2 enrichments, 12 inches, round the one-pair, and flower in the drawing-room ceiling, 18 inches diameter. The parlour, and staircase, and passage, to be floted and whitened, and the walls stuccoed in for paint. A small block cornice round the hall and landing; a plain cornice round the back parlour, and enrichment ditto as before round the dining-room, with ditto flower, 18 inches diameter. All the window reveals to be stuccoed. The floors of the ground, first, and second floors to be pugged. The front of the house, from the balcony into the area, to be covered with Parker's cement, and the part above the area to be rusticated, as shown, and a bold cornice, with fascias, be executed in Parker's cement, to be put under three-pair windows, and one of smaller size on the parapet, with 2-inch York cores, and all the stucco to be coloured and jointed to imitate stone.

MASON.

To fix plain Portland chimney-pieces, with 1¼-inch slabs and hearths of York stone in the attics and kitchen in basement, and moulded boxed ditto in the rooms of the three-pair story, and two-pair story, and basement. Fix veined marble box chimney-pieces in the rooms of the entrance-floors, and one-pair ditto, value in the whole 40*l.* before fixed, with 1½-inch Portland slabs, and rubbed York inner hearths. To fix Portland window-sills, 2 bricks thick, to all the openings in front of the house, and 3-in. York ditto at the back. Fix Portland steps and landings to front doorway, and Portland gallery landings on iron cantilevers to windows on the first-floor, to the front and back; those in the front to be the whole width of the house. To fix York quarry coping on all the walls of the house and offices, and York paving on the kitchen flue. To lay York paving in the kitchen passages, areas, &c., not boarded. The old landing and steps at the entrance not to be used again, nor the old kerb. A new Portland kerb, 8 inches × 6 inches, wrought, weathered, and set firm, every joint joggled, &c. The paving in front area to be relaid, and a flight of York steps fixed down into the area, and the Portland steps to be in one length.

PLUMBER.

To lay all the gutters and flats with 7-lb lead, and put 5-lb. flashings, 6 inches wide to all, let into the wall. The lead to be milled, to turn up under the slabs 6 inches, with sufficient drips to overlap 3 inches, and the under-lead let into the gutter-board, and proper cesspools formed and soldered to take the water. The ridges, and kerb, and the dormers, to be covered with 5-lb. milled lead. No 2 patent water-closets to be fixed with all necessary apparatus, D trap, soil and supply pipes, from the cisterns and down to the drain. The cisterns to be lined with 7-lb. milled lead, the bottoms to be 8-lb. To line and fix a large cistern to contain 20 feet super, in the same manner, to supply the house; and lay on water to the sink and all the cisterns from the main, with ball-cocks, bosses, &c., complete.

PAINTER.

To paint all the work usually painted, inside and out, four times, with good white lead and oil. The parlours, one-pair floor, and staircase and passage, to be flatted, as well as the two-pair. All the windows to be glazed and skylights with second glass. Those of the entrance and first floors and staircase to be best Newcastle, well bedded in good oil putty and back puttied.

PAPER-HANGER.

The rooms on the second and third floors to be papered with paper 6*d.* per yard and suitable border. The drawing-rooms with 12*d.* paper and suitable border.

SMITH.

To refix the railing in front; to fix new iron railing to the area steps and basement staircase, and round the back area. To fix a new ornamental iron railing to balconies, and run the same with lead; proper 4-inch 5-lb rain-water pipes to be fixed where necessary, to take the water from the roofs to the drains, with lead moulded cistern-heads. The pipes to be 4 inches diameter. The Contractor to pay district and other fees.

Period of instalments and payments, to be determined by Mr. J. P. Gandy.

When the roof and Plumber's work is completed	500*l.*
Plastering ready to receive the last coat . .	300*l.*
When the whole is finished	300*l.*
Within two months after	100*l.*

The balance within six months after the whole is given up. The last sum is withheld as security for the making good any defective works.

P.S.—This specification may be considered as an example of one in which the parties, acting in perfect good faith on both sides, merely required a general statement of the class of construction required, without entering into a very minute description of the details.—T. L. D.

Specification of Works to be done in Erecting, Building, and completely Finishing THREE DWELLING-HOUSES AND WORKSHOP PREMISES, *fit for occupation, in Margaret Street, Cavendish Square, London, for Mr. Brooker, Copper-plate Printer.* THOMAS L. DONALDSON, *Architect.* 1856.

THE whole of the artificers' works are to be executed in strict conformity with the provisions of the Building Act, and in the most workmanlike manner, as though they had been specifically and severally so described in this specification.

Fees.—Pay all fees to District Surveyor, Surveyor of Pavements, Commissioners of Sewers, Water Company, and for all other matters.

Provide all necessary hoards with good and sufficient boarded footpath outside ditto, with posts and handrailing, and with as little obstruction as possible to the public. Care is to be taken that all materials required should be delivered at such times of the day and so discharged, as shall cause as little obstruction as possible to the traffic and thoroughfare.

Old Materials.—The Contractor is to become possessed of all the old materials of the old house, excepting only such of the party-walls all round as are not to be pulled down; and the Contractor is to make an allowance (this amount to be stated separately) in his estimate for the old materials of the same, and clear the whole away ready for the new building, as though no such old building had existed, and not to use any part of the same upon the premises, except (subject to the approval of the Architect) such of the old bricks as are whole and sound, and such of the timber as is perfectly fit to be worked up.

Shoring.—The Contractor is to thoroughly shore up and secure all the surrounding buildings, and from time to time, when required by the Architect so to do, to clear and cart away all rubbish, useless scaffolding, or other matters or things, and to leave the new premises clear of all such matters, and to leave the same and every part of the said works whole, perfect, clean, and fit for occupation, and the windows cleaned.

Pull down Old Buildings.—Shore and secure the adjoining ground. Take down the several walls that may interfere, and grub up all the old foundations. Clear and cart away all the superfluous rubbish, soil, filth, or dirt arising from the foregoing, and also from time to time, as often as requried so to do by the Architect, as directed in the conditions relating to these buildings. Also, with the surplus brick rubbish of the old building, fill in all old cesspools, drains, and other holes.

DIGGER.

Dig out for all the several *foundations* and basement-floors, according to the sections, as also for the sleeper walls, piers chimneys, and other things required.

Dig out for a 6-inch earthenware *drain* from the farthest extremity of the rear of each of the premises respectively, completely through the house and vaults into the sewer in front, also for the several branch drains into ditto and for cesspools, ram in the ground perfectly sound all round the same; the ground under the street to be tunnelled.

Do all matters and things connected with the digging, that may be required for the due completion of the works.

BRICKLAYER.

Gauged arches to front windows of three-pair story, and axed arches out of seconds tuck pointed to windows and doors at back.

The *mortar* is to be mixed upon a brick or stone floor or platform prepared for the purpose, and is to be composed of the best grey stone-lime, used quite fresh and free from core or lumps, and sharp clean river sand free from impurities, using 1 part of lime and 2 parts of sand. All the walls with their several projections are to be built of English bond, and are to be well flushed in every course through the whole thickness, quite solid, and no 4 courses to rise more than 11¾ inches, and the headers in all cases to bond through into the interior of the work.

Materials.—All the *cement* used to be fresh and pure Sheppy, and mixed half-and-half with sharp clean sand.

The several *walls*, *chimney-piers*, and all *other brickwork*, including the vaults, area walls, arches, divisions for dust-bins in vaults, 2 feet 6 inches deep, and all other matters and things are to be executed agreeably to the plans, sections, and elevations, using the best hard and well-burnt grey *stock bricks*, the brightest and best-formed bricks to be picked out of the stocks, and used for facing the back fronts. The general surface of the fronts in street is to have the joints left rough where cemented, but the upper parts are to be faced with the best malms and tuck pointed. The arches to windows in this front to be set in cement.

Asphalte and Cement Courses.—All the walls to have a thickness of asphalte just above the footings. Inverted arches under all the basement openings. The 2 uppermost courses of all the walls and parapets to be laid in cement. Those parapets or tops of walls not capped with stone are to have an oversailing course, and brick on edge, both set in cement.

Provide to each story of all the premises 2 tiers of iron hoop bond $1\frac{1}{2}$ inch × $\frac{1}{16}$ inch, and 2 lengths to each tier, laid in cement.

The *front chimney shafts* to be faced the same as the principal front, and the back shafts as the back front, and all to go the height as shown in the elevations, and to have ornamental compo chimney-pots 3 feet high, set in cement with cresting, and plain tile flaunching rendered in cement; all the interiors of the flues are to be left quite smooth without rough projections, and each flue to be pargetted inside and plastered on the outside the depths of the floors, and cored carefully; no flue to be less in size than $13\frac{1}{2}$ inches × 9 inches when pargetted.

Bed and point all the door and window frames with good lime and hair. Provide and fix cambered chimney-bars $2\frac{1}{2}$ inches × $\frac{1}{2}$ inch, 9 inches longer at each end than opening of fire-place, caulked up and down.

All the principal partitions coloured red upon plans are to be bricknogged. Turn trimmer arches to all the fire-places in cement, and immediately after turning the same, fill up level in cement to the under side of the slab.

Drains.—Place 6-inch earthenware *tubular drains* from the extreme back part of each of the premises into the sewer as described in the digging, and 4-inch junction ditto into the same from the water-closets and sinks, and sink stones in areas, &c. A *cesspool* to be constructed in a front vault, the sides of 4-inch brickwork in cement with a circular brick bottom, and render the whole $\frac{1}{2}$ inch thick in cement, the size to be 3 feet square and 2 feet 9 inches deep. Put a York stone trap across the same, and cover with 2-inch York stones jointed on the trap. All the levels of the drains and cesspools to be regulated so as to produce a clear fall into the sewer.

General.—*Attend and cut away* and make good where requisite for the Carpenters, Plasterers, Masons, Bellhangers, Plumbers, Gasfitters, and all other trades; and do all other matters and things necessary, as Bricklayer's work, to make the whole complete. Build all *the sleeper and other walls* and piers in basement for floors, &c., put brickwork for bottom steps of stairs. *Pave the cellars* with brick on edge hard stocks in mortar. Cut out and make good to all the old walls throughout, and leave the same perfect. Find all necessary rough stones for corbels, and fix and wedge in the same in cement, and provide and fix York paving slabs to form projections of cornices ready for Plasterer. Make good all water and other pipes solidly into drains. Cut and parget all chases into old walls.

Provision.—Provide 1 rod of extra brickwork in mortar and 1 in cement, to be deducted, either in whole or in part, as the case may be, if not required.

Provide for underpinning the walls of adjoining buildings, if found to be necessary, the sum of 20*l.* and 20 feet superficial of 4-inch rough York in corbels to support chimney jambs, and the whole or part to be deducted if not required.

SLATER.

Cover the several roofs with the best large countess slates, fastened with 2 copper nails to each slate, and not less than 2 inches lap from upper to next lower slate; double courses under the dripping eaves. The whole to be left sound in every respect at the conclusion of the job.

Slate Shelving.—Provide and fix on brackets to each house 50 feet superficial of inch slate shelving rubbed on the upper face, half in widths of 9 inches and half 12 inches wide.

PLASTERER.

Rake out the joints of brickwork to form a key for the plastering. Lath, lay 2 coats, and set all the ceilings and soffits throughout the house, including landings and strings to stairs.

Render and set the bricknogged partitions, and all the brick sides throughout except in cellars; the rooms on the one-pair and entrance floors to have an extra coat, and to be floted.

Cornices.—A cornice to be run all round the rooms of the entrance and the first floors to girth 15 inches, according to a drawing to be given, and introduce into the same 1 enriched ovolo and bead girthing 4 inches. Put a plain cornice to girth 9 inches, or a cast enrichment to girth 6 inches to the passages and staircase landings.

Provide and fix in each of the rooms in the ground and first floor of the houses a centre flower, value 25*s.*, as may be directed.

Wash, scrape, and well stop, clearcole, and colour all the walls, and whiten ceilings of basement story throughout, and prepare all the other plastering for paper. Limewhite twice over all the walls in back areas and cellars, and within the week before the final finish give one more coat of lime whiting to the same, making in the whole 3. A *compo skirting* to be put round the whole of the basement story, 7 inches high, and paint the same 5 times in oil.

Cement Front.—Cover the street front, as shown on drawing, with blue lias cement, with the several strings, cornices, and moulded architraves, &c. Continue the blue lias cement over the blocking course, and down inside the parapet to the gutter.

Pug the floors of entrance and ground-floors in each house. Form the angles to chimney breasts, and other projections, with Keen's cement.

Stucco the reveals to back windows with blue lias.

Make good after all workmen, &c., and leave the whole perfect, clean, and complete.

MASON.

Materials.—The whole of the stone to be of the best quality, clean, sound, and free from vents, cracks, or flaws.

3-inch Yorkshire *steps* to all basement doorways and vaults, with mortice holes in ditto for doorcases. 3-inch York rubbed and throated *sills* to windows in front areas, and to back fronts and workshop windows ½-inch out of the level, and 2 inches under the wood sill, and to project 2 inches. Sills to front windows to be Portland stone, sunk, weathered, and throated, 9 inches × 4 inches; those to two-pair windows to have blocks as shown. All the stone steps to doors and sills to windows to be 3 inches each way larger than the openings. *Pave all the areas* with 2½-inch York on 1 course of bricks at joints, half brick wide, bedded in mortar. Let a 6-inch bell-trap into paving of each area. Put 2½-inch York paving to the front and back kitchens in basement in front of the chimneys, 2 feet 2 inches wide, the whole length thereof; also to staircases, cellars, scullery, and larders.

Put a 6-inch York *sink* in each scullery, and in the basement of workshops, 4 feet × 2 feet 6 inches, rounded end, and pinned into the wall in cement, with York upright to each; fix a brass bell trap and waste pipe 2 inches in diameter to every sink.

Cut all necessary holes and back joints, and put 2½-inch rubbed York inner hearths to all the *fire-places* throughout, and 1½-inch Portland slabs the length to the outside of each jamb, and 1 foot 6 inches wide.

Put *Portland* or *Derby stone chimney-pieces* to all the bedrooms, value 15*s.* each, exclusive of the fixing, in the upper floor of each house, and 35*s.* each in the second floor, exclusive of the slabs, and 25*s.* value to the kitchens, with wood shelf in addition, with rounded corners and cantilever brackets. 2 marble chimney-pieces to one-pair and ground-floors, value 4 guineas each. Mr. Brooker to find these if he pleases, and deduct their amounts out of the contract; but the Contractor is to fix them at his own expense, and all the prices above named to be exclusive of fixing.

4-inch York *templates* under wood girders 18 inches × 14 inches.

The *staircases* from basement to entrance floor of each house, and the 4 flights in the workshops, and steps in back area of the largest house, to have 2½-inch tooled York steps and risers, with ends cut and pinned 4½ inches into the wall; the bottom step to be solid, with rounded end; the landing or quarter space to be 3 inches thick, with riser under; all to be properly back jointed and fixed, and to have holes cut for the railing bars, described in the Smith's work.

The *steps and landing* to the entrance doorway to be of Portland boxed, 3 inches thick, properly worked. The steps to have moulded nosings, and to be filled in beneath so as to have a solid bed and bearing. The upper step to be solid, and morticed for doorcase.

Take up the *footway and paving* and kerb, also any of the carriage-way paving that may be required for the scaffolding, hoarding, or gangway, and make good and relay the same at the conclusion of the job, providing any new stone that may be requisite; or should the Parochial Authorities choose to get the paving done by their own tradesmen, the Contractor to arrange with them, and pay all expenses, including fees, &c. Let in the coal-plates described in the Smith's work; also all templates for ends of trimmers, &c., that may be required.

Portland kerb to the front areas 7 inches × 6 inches, joggled or plugged at the joints, and with holes cut for iron gratings, in 2½-inch York capping stone to walls of back areas of houses, set in cement. Cut all necessary holes for iron railings.

The *balconies* to the drawing-room floor next the street to be of 4-inch Portland stone, rebated joints, moulded front, well pinned into the wall, and supported upon iron cantilevers.

Cut all holes for Plumbers, Bellhangers, and other trades, and leave all the Mason's work perfect, clean, and complete.

CARPENTER.

Materials.—The whole of the *fir timber* is to be of the best Memel, Dantzic, or Riga fir, free from sap, shakes, or loose knots, or other defects; the *deals* to be of the best description of Christiana, well listed, entirely free from sap, shakes, or other defects.

The whole of the work to be wrought, framed, moulded and put together in the very best manner, and as hereinafter described, and to hold when fixed the several scantlings specified. No joists, rafters, or quarters to be more than 12 inches apart. Provide and fix all centring for arches or openings; support the same securely. Lay sufficient wood bricks for fixing all the linings, grounds, and other woodwork throughout. 1 tier of bond timber, 4 inches × 2½ inches, to each story except the basement, not to be cut out of openings until directed by Architect, every length to be in 1 piece without joining. Wood bricks, 4 inches × 2½ inches, wall-plates to all the external walls under every floor 5¾ inches × 4½ inches, placed edgeways all in one piece each length, and to be with the bond well secured to return walls, and dovetailed and spiked at angles to return pieces; all bond timber and wall plates to be entirely free from large knots or shakes, and to be of good straight grained timber. The wall-plates to the first and second floors and in basement are to form the lintels with filling pieces 5¾ inches deep, the width required to make up the thickness of the walls; lintels to third floor 5 inches deep, the width required, and all lintels to be 18 inches longer than the openings.

Frame the roofs, floors, and partitions as shown and dimensioned on the drawings in the most careful manner, all to be tenoned, and in no case to be halved on to each other.

Gutters.—Inch-gutter boards and bearers, boards cut down the middle so as not to be more than 4½ inches wide any one board, and angular fillets at the bottoms of gutters; ¾-inch yellow deal battens for slates 2¼ inches wide each, feather-edged eaves-board and fillets; gutters to be laid in 2 lengths, and drips not less than 2 inches, rebated out the thickness of the lead. Trough through the roof from centre gutter to back, 1¼-inch deal sides, 6 inches high and 8 inches wide, and inch bottom to fall into a square shoot made of inch deal, and shoot 8 inches wide through the wall, with a very quick fall, at least 4 inches to cistern head outside; fix an iron tie 3 feet 6 inches × 1½ inch × ⅜ inch at each end of the binders from front to back over the wall plates.

The joists are to be of the several scantlings specified on the drawings.

Herring-bone strutting 4 tiers to each floor. Find feather-edge trimming-pieces to trimmers, and make good all joists to fire-places, ceiling joists under trimmers; furrings to floors and to ceilings;

the same to partitions, with strong fillets to prepare the whole for joiners and plasterers, so that they may work on level and straight lines.

Upper Story.—Frame the *ceiling joists* in each and the rafters in the roof for a trap-door; put fir proper doorcase for the same, rebated out for inch boarding in narrow widths to top and sides, with quarters and bearers for lead, with good fall; 1½-inch sash door, 4 feet × 2 feet 9 inches, hung with a pair of strong hinges and two 4-inch iron bolts to ditto; ¾-inch tongued, ledged and beaded door in ceiling, 2 feet square, with 1¼-inch wrought, rebated, and beaded lining for ditto, 2 small bolts.

Floor in Roof.—100 feet superficial of ¾-inch rough deal boarding to form *floor in roof* of each house to stow away boxes, &c., and strengthen joists under ditto.

All partitions and floors to be framed for the necessary openings, as shown on the plans, and all openings in floors to have trimmers all round.

Provide all the timber necessary for the bricknogged partitions, braced and trussed where requisite; the faces hacked where the plastering will come, and *a strong step-ladder* to be provided to each house with hooks and staples.

Provision.—50 feet cube of fir framed to be used where directed in Mr. Brooker's own house, and 25 feet in each of the others.

JOINER.

Second and Third Floors and Skirtings.—Put inch white folding-floors to the whole surfaces, border the same and all floors 3 sides for the slabs of fire-places. Put ¾-inch plain skirting, 6½ inches wide, to upper floor in all the rooms, passages, closets, &c., and torus skirtings to two-pair in the same way.

Entrance and First Floors and Skirtings.—Put inch yellow battens straight joint to the floor of one-pair and entrance-story, and for skirtings to these floors, ¾-inch torus skirting on the entrance-floor 8½ inches high, and on one-pair 15 inches high, rebated and moulding on ditto of approved profile girthing 3½ inches. The whole of the skirtings to be tongued at angles and exactly mitred, also back rebated for plastering, except in the one-pair, where there are to be ¾-inch narrow grounds cut out of one another; thus the front planed on the face and the splay part left rough as a key for the plastering. Landings the same. The skirtings to the basement are to be compo.

Basement Floor.—Put 1¼-inch yellow deal floor over the whole surfaces of the basement except the passage of basement wine-cellars, and other parts described in the Mason's work to be paved; all communicating openings to be made good with boarding and skirtings in the same way.

Window Sash Frames.—Third floors, second floors, basements, staircases, and water-closets, to have oak sunk sills, 1¾-inch deal astragal and hollow sashes, double-hung iron pulleys, white lines and iron weights. The windows in upper story to have ¾-inch linings on the splay, tongued to frame inch wrought grounds 4½ inches wide, rebated for plastering, and bold OG or Grecian moulding all round to cover joints of plastering or grounds, Keene's *cement backs* with skirting under, and capping tongued into sill, the linings to show as much of the frame all round as the head will permit.

The entrance and first floors to have deal cased frames, oak double-sunk sills, deal pulley pieces, beads, parting slips, 2-inch Lamb's-tongue sashes, double hung with brass pulleys, best white lines and iron weights, 1¼-inch moulded backs, elbows, and soffits on the splay; 1½-inch 3-panel moulded shutters framed to cut, and 1¼-inch 3-panel bead butt and square back flaps, strong hinges and back flap hinges complete, and one 24-inch strong spring shutter bar to each (no shutters to go up higher than within 6 inches of the soffit to allow space for the blinds); 1½-inch deal proper splayed boxings 6 inches wide, 1-inch to be sunk next the shutter ⅛-inch in, and Grecian moulding of approved pattern, 3 inches on the face, 5 inches girth all round boxing. Inch bead butt back linings tongued to frame and boxing, 4 plain ebony shutter-knobs to each window.

The front windows in basement to have 1¼-inch deal, 2-panel, bead flush and square shutters and back flaps, with rule joints to fold back into a recess in the wall, with 3-inch butts, rule joints and back flap hinges, spring-bar fastening, brass shutter-knob, inch plain tongued lining and soffit, 1¼-inch rebated boxing grounds, and moulding on edge; 1¼-inch rounded window-board and bearers in recess, and nosing on sill below window, *the back to be cement.* The back windows to have inch plain tongued linings, with OG moulding on edge, 1¼-inch tongued nosing on sill.

Folding-doors.—2¼-inch moulded on both sides folding-doors where shown upon plans, hung with 3 pair 4-inch brass rising hinges, and a 7-inch mortice lock and brass knob furniture; one 12-inch and one 30-inch brass flush bolts; 1½-inch double rebated jamb-linings, with grounds and Grecian mouldings to match the windows and doors.

Doors.—1¾-inch 4-panel square doors to two-pair and three-pair floors, and 2-inch ditto to basements, with upper panels glazed where so directed on plan, hung with 1 pair of strong 3½-inch butts and a 7-inch 3 bolts brass knob iron-rim lock to each; 1¼-inch single rebated linings, finished with grounds to match the windows; 1¾-inch moulded on both sides doors to the one-pair and entrance floors, with mortice locks. Inch proper ledged doors to vaults, hung with 18-inch cross garnets, and a wood stock lock and key. Prepare and fix to enclosure in *front area* of larger house fir solid frame oak sill, and 2-inch deal bead flush sash *doors*, and fir solid frames, hung with 3-inch butts, and 8-inch iron-rim lock and fastenings complete, from basements into areas.

The entrance doors to be all 2¼-inch, 4-panel, bolection moulded doors, hung with 4-inch butts, and having 9-inch best brass-mounted drawback lock; two 10-inch barrel-bolts, and barrel door-chain and bronzed knocker, value 7*s.* 6*d.* P.C.; the two latter to the doors to houses only. Fir proper door-frame, with semicircular head, as shown on elevation, and 2¼-inch moulded fanlight, in one frame, glazed with plate-glass, proper rebated and beaded transom, moulded architrave round door inside.

The door leading to yard to be 2-inch, bead flush, moulded sash-door, with diminished stiles and 1¼-inch bead flush lifting shutter; 3½-inch butts, 8-inch iron-rim lock, two 8-inch barrel bolts, thumb-screw fastening to shutter-stubs and plates, and shutter-lifts.

Staircases.—1¼-inch yellow deal steps, inch risers, and strong fir carriages from ground-floor to two-pair, with moulded nosings mitred to strings. The steps to be housed into 1¼-inch moulded wall-string, and 1½-inch framed and staff-beaded string board, cut and mitred to risers, with apron-linings and nosings to floors to match round the well-holes; all the remainder steps above to be the same, but with rounded nosings only; 1¼-inch plain beaded outer strings, and 1¼-inch wall-strings, grooved for housings to receive steps, 1¼-inch yellow floors to landings.

French polished Honduras mahogany rail from entrance to three-pair inclusive, all the way up, 3½ inches × 2½ inches, with square bar balusters; Honduras mahogany turned cap to iron newels; all the staircases to be left complete and in unison with the other works.

The *spandril* on ground-floor, enclosing the stairs down to basement, to be 1½-inch deal, moulded and bead flush, with door in the same, having 3½-inch butts, 7-inch iron-rim lock, and proper stops round.

Cisterns.—Provide and fix in each of the 3 houses 2 supply-cisterns, each containing 24 cubic feet in the clear, to be formed of 1½-inch deal, dovetailed and bound together with stout hoop iron; the several angles of bottoms and sides to have triangular fillets, and to be prepared complete in every respect for the plumber.

Water-closets.—Enclose on the half-landing of the two-pair floors of Mr. Brooker's own house, and entrance-floors of the 3 houses, where shown on the plans for water-closets, with 1½-inch framed bead flush and square partition; bead flush door in ditto, hung with 1 pair of 2½-inch butts, and a brass pulpit-latch and catch; 4-inch brass rod bolt inside. Form woodwork for sink of lobby, of the upper water-closet of Mr. Brooker's own house, as shown on the plans, with all necessary holes in ditto for Plumber, and put in 1¼-inch flap and frame over the same, hung with back flaps; inch polished Honduras mahogany seat, riser, and clamped flap and frame; hung with 2 brass butts, and cedar seat with hole in ditto for basin; narrow beaded mahogany skirting round seats and returns. Put clean deal seat and riser, with clamped flap and frame to water-closets in basements; put a mahogany candle-shelf and paper-box in each.

Closets in Houses.—Enclosures for closets to be 1½-inch, framed and beaded, with 4-panel square doors; stops and hinges same as other doors, and suitable locks and keys to each; sham furniture to match other doors; the divisions to be made of inch tongued and beaded both sides boarding; 3 shelves in each closet, average 12 inches wide and 1 inch thick.

N.B.—All shelves in closets to be loose, resting on slips.

Dresser and sunk shelves to each of the kitchens, of the usual description, substantially good, with 3 drawers 8 inches deep; pot-board and bearers; cut brackets; 2 mahogany knobs to each drawer; 1¼-inch deal shelf to fire-place in kitchen.

Put a *plate-rack*, firmly fixed, in each scullery, 3 feet wide and high.

Enclose space under the basement-stairs, to form closet, with proper doors, as above described, and 20 feet super. ¾-inch shelves on brackets.

Dust-bin to be allowed for in each house; to be formed where directed.

PAINTER AND GLAZIER.

Well rub down, knot, and carefully stop and prepare all the work throughout. Paint the whole of the work inside, and all the outside wood and iron works, and sills, 4 times over, in good oil colours, composed of the best white lead and oil; to be finished of approved common colours. The 2 rooms in the one-pair and entrance-floors, and the staircase up to the two-pair and passages, to have an extra coat of flatting. The front entrance-door to be finished dark green and varnished.

The *glass* in the second and third floors, staircases, and basements, to be of best second Newcastle or Dumbarton glass. The front rooms of entrance and first floors to be of the very best British plate 22-oz. glass. The back windows in entrance and first floors to be the best crown.

The panels of such doors as are to be glazed to be filled in with rubbed glass of approved pattern, all to be free from specks or other defects; to be well glazed, and left whole, perfect, and clean, when the premises are given up.

Before the back windows of Mr. Brooker's own house are glazed, particular directions are to be received from Mr. Brooker respecting the same.

PLUMBER.

All the *lead* to be of the best description and free from all defects.

Lay gutters with lead, 7lbs. to the foot superficial, turning up not less than 8 inches under the eaves of the slates at every point, and 6 inches up against all the walls; the lead gutters not to exceed in any one length more than 13 feet. Put lead *flashings* to all the walls surrounding the roof, 5lbs. to the foot, and step flashings where necessary. Put lead hips and ridges, 5lbs. to the foot, 18 inches wide, well secured by lead-headed nails; 6-lb. top and 5-lb. cheeks, and apron to dormer. The gutters in all cases to follow the work as described in the Carpenter's work, and with angle fillets, and soldered round the bottom and up the angles.

Fix ¾-inch pipes to *sculleries* with ¾-inch brass bib-cock and boss, and to sink in upper closet, also to basements with like proper cocks to the same. All these pipes are to be so laid out of the level, that they may be emptied in frosty weather, and a cock for that purpose forming also a stop to be put in front area.

Water-closets.—Provide a stout 4-inch *soil-pipe* from each of the water-closets into drain. Find and fix a stout inch service-pipe to all the water-closets and cisterns and ball cocks complete, and inch stop-cock on each service, and inch ferule to main, and put into each cistern one 1½-inch waste pipe.

Provide best patent valve apparatus to water-closets, the principal ones to be of blue ware with D traps, and service boxes complete; the water-closet on staircases to have a 5-lb. lead safe under the seat with D trap-pipe. The Servants' water-closets to have earthenware pans and traps with ¾-inch service-pipes and brass pull chain and valves.

Line the sinks with 7-lb. lead ; all the sinks to have waste pipes half as large again as the supply pipes, and to be conveyed into trapped soil-pipes or drains, and in all cases to have good brass bell traps.

Line all the water-cisterns described in the Carpenter's particular with 5-lb. lead to sides, and 8-lb. cast lead to the bottoms.

General.—All the Plumber's work to be left perfect and complete. The Plumber is to fix his piping in such directions and parts, as shall be specially directed by the Architect so as to avoid any unsightly appearances.

SMITH.

Cambered chimney-bars to all fire-places, going 9 inches each way longer than the openings, and caulked up at each end 2½ inches wide ⅜ inch thick.

Cast-iron railing to front areas 4 feet high, in panels with standards, and to return on each side of front doors, and light iron railings to back areas.

Perforated cast-iron plates to coal-cellars. Provide and fix *hoop-iron ties* as bond to the walls as may be directed.

Water-pipes.—4-inch cast-iron *rain-water pipes* with large cistern head and waste, shoots and shoes.

Fix 4 iron *balusters* firmly screwed to each flight of stairs. Provide and fix to *balconies* in panels cast-iron *railing* 3 feet high.

A *cast-iron scraper* to be fixed to each front door, value 7*s.* 6*d.* prime cost, and 1 ditto at back door of Mr. Brooker's house at 5*s.*

5-inch cast-iron *eaves gutter* and brackets to roof of passage across yard.

Railings.—The *front-area railing* to be of the value of 5*s.* 6*d.* per foot, fixed complete including standards and braces. The back-area railing to be of the value of 3*s.* 6*d.* per foot, fixed complete. The balcony railing to be of the value of 6*s.* 6*d.* per foot, fixed complete ; wrought-iron half-round handrail 2 inches × ⅜ inch and ¾ inch round balusters, and 1½-inch round newel to basement stairs, 1 baluster to a step.

Guard Bars.—Wrought-iron guard bars to scullery windows ⅝ inch diameter, with top and bottom rail 1½ inch × ⅜ inch, the ends secured to wall. Wrought-iron framed grating over back area leading to yard, of wrought-iron frame 3 inches × 1 inch and bars 1½ inch × ¾ inch, 3 inches apart.

14 cast-iron *cantilevers* for balcony at 20*s.* each, fixed complete.

Provision.—Provide the hoop-iron specified in Bricklayer's particular; 1 ton extra of cast-iron and 2 cwt. of wrought-iron in straps, bolts, rods, or bars, to be allowed for if not used.

PAPERHANGER.

Paper the sides of the rooms and landings in the attic story and all water-closets with paper value 3*d.* per yard. Staircases and second floor 3*d.* per yard cut close. The rooms of the entrance and first floors with paper 5*d.* per yard cut close, and backed with lining paper. All the walls to be rubbed down and prepared and the paper neatly hung.

BELLHANGER.

Provide and hang with cranks, wires, tubes, and all proper appurtenances in the most complete manner to each of the houses, the following bells—a servant's bell and a visitor's bell to front doors with brass pulls, and a house bell and office bell to side door leading to printing offices; bells in basement from the entrance floor, one-pair, two-pair, and three-pair, with neat brass lever pulls and iron knobs to the two lower floors, and pulls to the two upper. 1 bell in attic with pulls from kitchen and entrance and one-pair floor, and 1 ditto with pulls from bedroom floor.

Speaking-tube to be inserted from top to bottom of house with mouth-pieces at each floor.

WORKSHOPS.

All the instructions and particulars of materials, work, and other matters contained in the general specifications, are to apply equally to the several trades and operations in the workshops.

BRICKLAYER.

Carry a 9-inch *earthenware drain* from the W. C. to join the drain under the front house, laid with a proper fall, and connect therewith branch drains, 6 inches in diameter, from the ends of rain-water stacks and along area.

Execute in *stock brickwork* all the walls, piers, and other parts as shown upon the plans, the front to be faced with picked stocks, flat joint and jointed, and the arches of front windows to be of malms, accurately cut and gauged, and set in putty closely in front and back, and at their soffits. The 2 *upper courses* of all the walls and parapets to be *set in cement*, and the parapets finished at top with oversailing course and brick on edge. All the insides of all the walls to be fair-faced, flat joint, and jointed. *All the flues* to be well pargetted, and the chimney-shafts are to be carried up to the heights indicated. Provide and fix second-sized chimney-pots with flanch tiling and cresting in cement.

Hoop-iron Bond.—Provide and fix in cement all round the walls in each story 2 tiers of hoop-iron bond, 1½ inch × $\frac{1}{16}$ inch, 2 lengths to each tier laid in 1 course in cement. Point well up to all the door and window frames. Cement fillet against the parapet of the gable ends of roof. Form the whole of the floor over the basement according to *Barrett's patent fire-proof* principle, with rolled joists 8 inches deep, and concrete filling in 8 inches deep.

SLATER.

Cover the several roofs with the best large countess slates, fastened with 2 copper nails to each slate, and not less than 2-in. lap from upper to next lower slate; double courses under dripping eaves. The whole to be left sound in every respect at the conclusion of the job.

Cover the *ridge* with glazed earthenware ridge tiles, well bedded in cement, and tied together by an iron rod.

CARPENTER.

The *roof* to be as shown on the drawings. The timber of principals, which appear below the ceiling to be wrought. Inch yellow deal gutter on bearers, laid to a current of 1½ in 10 feet run, with 2½-inch drips. Line the underside of gutter with ¾-inch deal, staff-beaded. Prepare opening 2 feet square with inch deal ledged door leading to gutters, with two 6-inch neck bolts, and inch deal tongued linings.

The Upper Floors.—Fir girders 14 inches × 12 inches, wrought and chamfered at the lower angles; joists 8 inches × 2½ inches, notched down on fillets securely nailed on tie-beams. Trimmers 8 inches × 4 inches. Form where directed in each floor a *well-hole* 4 feet square, two 2-inch clamped flaps to each, hung folding with 18-inch water joint hinges, and sunk rings in ditto, so as to hoist goods up to the top from the basement-floor. The *well-hole* to have 1¼-inch wrought and tongued linings, and a wrought moveable bar 4 inches × 2½ inches underneath of flap. Form well-hole for stairs, which are to be of stone. The wall plates under ends of joists are to be 4 inches × 2½ inches, laid outside the party walls, and resting on York corbels 2½ inches thick.

Observe, that the floor above the basement being laid according to Barrett's fire-proof principle, is to have only slip joists 2 inches × 2 inches, cut out of a batten 4 inches × 2 inches, with a diagonal cut, and inserted into concrete 1 inch.

JOINER.

Lay the 3 upper floors with 1¼-inch yellow battens, folding with fillets all round against the walls, cut out of 2-inch square slips instead of skirtings.

Enclosure of 2-inch deal, framed, glazed, as shown, on the entrance-floor to office counting-house and proving-room, with 4-panelled square doors, with suitable hinges and locks. The lower part of the said enclosure to rise 4 feet 6 inches, 1 panel high.

Entrance-door.—Fir solid, rebated and beaded frame to *entrance-door* on entrance-floor, and hang thereto 2-inch 4-panelled flush and square door, with proper cased lock, fir solid frame, and sash at side of ditto.

Fir solid rebated frame to *area doorway*, and hang thereto 1½-inch 4-panelled, bead, butt and square door, the upper panels glazed, with two 8-inch bolts and latch; fir solid frame and side sash to ditto.

Fir solid frames, 4 inches × 3 inches, oak-sunk sills, 2-inch deal chamfered sashes in 2 heights, the upper ones hung on pivots with lines and hooks complete.

Water-closet.—Form enclosures, and hang thereto inch deal ledged door, and latch and bolt to ditto, with holes cut therein for light and air; 1¼-inch deal seats and risers on strong bearers; 1¼-inch deal clamped flaps and beaded frames, brass hinges; ¾-inch deal skirting 3 inches wide, over the seat, and ¾-inch deal skirtings 4 inches wide round the floor, on fir joists, and sleepers, 3 inches × 2 inches, laid on bricks. The *cistern* in basement to be of 2-inch deal dovetailed, 6 feet long, 4 feet high, and 3 feet wide, outside measure, fixed on brick piers.

Provide and fix five 2-inch *skylights in roof*, 6 feet × 5 feet, with 1½-inch linings, and all proper fittings complete. 4-inch *quarter partitions* dividing upper shops, and on ground-floor where shown, to come under a girder in each case. *Internal doors* to upper floors, 2-inch, 4-panel square, with 3½-inch butts, and 7 iron-rim locks; 1¼-

inch rebated and double-beaded jamb; similar doors in basement to blanket and rack places.

Mr. Brooker's iron door and frame to be re-fixed in doorway to plate-room. No door to be provided for safe for books.

PLASTERER.

Lath, plaster 2 coats all the ceilings, and whiten ditto; and twice limewhite all the walls throughout.

PLUMBER.

Lay the back *gutter* in all respects as described in the general particulars for houses, with flashings; the ridge is to be covered with black glazed earthenware ridge tiles.

Water-closet in the Area.—Put a strong earthenware trapped basin, fitted up and made in all respects complete; lay on from cistern inch supplying pipe, with proper cranks, stop-cock, and all other fittings. Line the *cistern* in basement with 5-lb. milled lead to the sides, and 8-lb. cast lead to the bottom. *Lay on the water* from main with inch pipe, and put to the cistern $1\frac{1}{4}$-inch waste pipe soldered below the dip, with washer and waste complete. Lay on *supply pipe and tap to sink*, and put thereto 2-inch waste pipe with brass bell trap, and provide and fix tap to cistern, with sink-stone under ditto. Fix to *urinal* an inch waste pipe complete, leading into drain.

PAINTER.

Paint all the outside and inside woodwork usually done, and ironwork, 4 coats in good oil colours.

GLAZIER.

Stop in all the outside sashes and glazed doors with fluted or ribbed glass $\frac{1}{8}$th of an inch thick, as per pattern, and glaze with the same the lower tiers of Mr. Brooker's office. Glaze the rest of the internal partition on the entrance-floor with seconds crown glass, as also the skylights with stout ditto in long lengths.

MASON AND PAVIOUR.

A 7-inch *sink* on brick piers, with rounded angles 5 feet long, 2 feet wide, and a white earthenware urinal near ditto.

Pave the whole of the basement and area with 2½-inch tooled York slabs, laid hollow on 1 course of bricks at the joints. Provide and insert 4 cast-iron bell traps where directed.

20 *York stone templates,* 18 inches long × 9 inches wide, 5½ inches thick, under the ends of tie beams and girders, and York corbels under plate for ends of joists, as specified in Carpenter's particular.

Steps and risers of staircase to be of 3-inch tooled York, securely pinned into the walls with 3-inch landings as shown, and solid step at bottom.

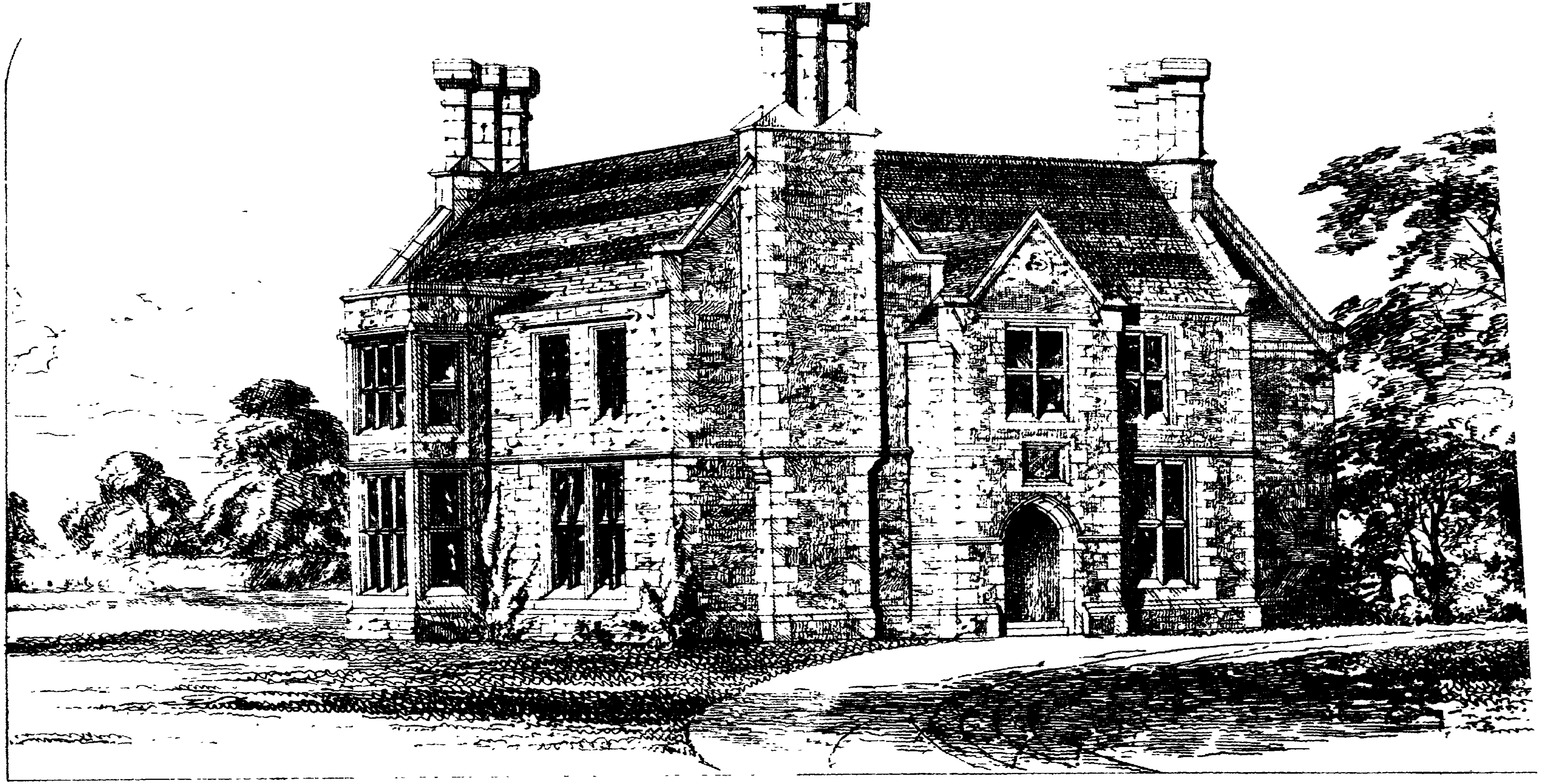
SMITH.

Guttering.—Provide and fix with regular falls on brackets under the eaves next the houses half-round cast-iron guttering, 4 inches in diameter, well secured at the joints, and discharging into cistern heads of rain-water stacks with proper shoots; 4 stacks of 3-inch rain-water piping, with heads and shoes discharging into drains, the joints well stopped with oakum.

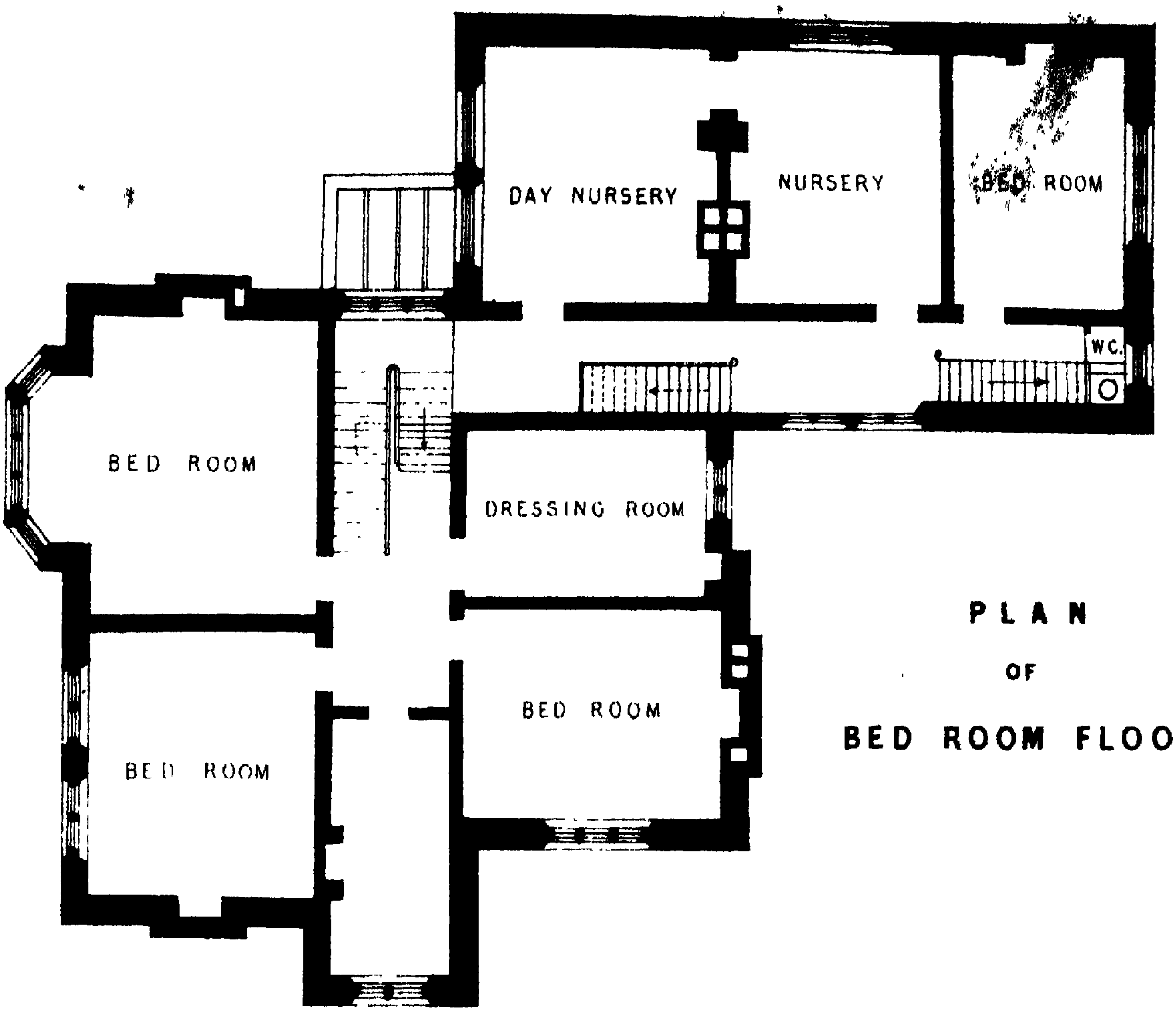
Supply the Joiner with all necessary hinges, locks, bolts, &c., to complete his work.

A *zinc speaking-tube* from Mr. Brooker's office, with branch into the counting-house down to basement, one to large press-room, and one to the uppermost floor, with mouth-pieces thereto in each floor.

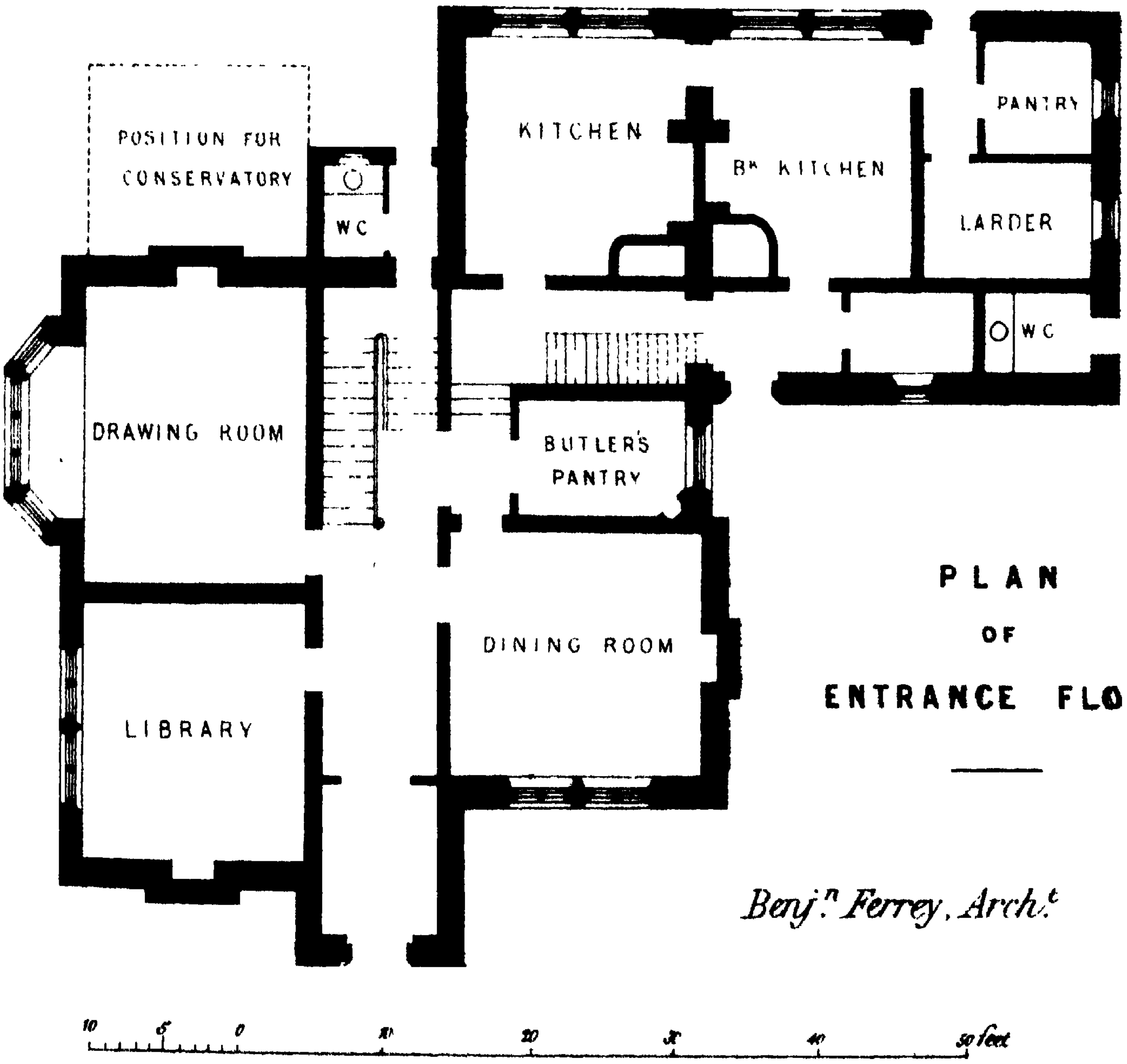
Wrought-iron balusters, 1 inch × ¾ inch (1 to each step), on the staircases from bottom to top, with half-round top rail, 1½ inch × ⅜-inch and 1¼-inch round newell, all properly let into the stone steps and run with lead, and continued along the well-hole on each story, and secured to the trimmer of floor.



HUNTSHAM PARSONAGE HOUSE



PLAN
OF
BED ROOM FLOOR



PLAN
OF
ENTRANCE FLOOR.

Benj.n Ferrey, Arch.t

Vincent Brooks lith

Specification of the several Works required to be done in Erecting and Finishing a PARSONAGE-HOUSE *at Huntsham, near Tiverton, in the Diocese of Exeter, according to the Drawings and under the Superintendence of* MR. B. FERREY, *Architect.* 1853.

EXCAVATOR.

Form excavations to the required depth over the surface of the main building and for the required level of the floors to the offices, and from thence to the depths shown for the foundations and the cellar; the trenches to be of sufficient width for working the earth, well rammed about the footings as soon as they are built, and the superfluous ground wheeled away or levelled as directed. Form excavations for the drains and cesspools described in the Bricklayer's work.

Provide for digging a well 40 feet deep 3 feet 6 inches clear diameter, steened round with 9-inch sides and domed over at the top with manhole formed and covered with 3-inch stone cover.

WALLER AND BRICKLAYER.

All the walls above 9 inches thick are to be built of the local stone, to be procured from a pit near the site, which will be pointed out to the Contractor.

The proprietor of the pit in question is very desirous of accommodating the Contractor as far as possible; but the pit is a new one, and the trustees cannot pledge themselves that the stone in it will hold out or that a supply can always be obtained at a day's notice, it being already in work for other buildings. It will be supplied at a cost just sufficient to cover the cost of quarrying and a portion of the repairs of the road, which is through a tillage field in the occupation of another person. The Contractor will not be allowed to quarry there on his own account, the space being insufficient for two parties at one time.

In the event of this source of stone failing, the Contractor will have liberty to quarry on a pit on Bampton Down, and this failing, he is to employ Hockworthy stone.

In either case, the Contractor is to be responsible for any damage done by the carts employed going out of the track indicated to him; but the proprietor will keep the road to the pit in question in the same state of repair that his agent considers necessary for his own approach to it.

The walls to be built of the several heights and thicknesses shown on the drawings and figures thereon on proper footings, and built in random courses varying from 5 inches to 17 inches deep, well flushed up, and through stones inserted at intervals of about 5 feet in each course. The external surfaces above the ground line to be neatly hammer-dressed, and the joints pointed with black beaten ash mortar and close joints formed next the stone dressings. The mortar for the walling to be composed of one portion of strong stone lime to two of sharp clean sand well mixed and tempered together. All the internal walls (which do not exceed 9 inches thick) are to be of brickwork, the bricks to be sound, hard, square and well-burnt stocks; the 4-inch walls to be of brickwork built in cement with equal proportions of cement and sand. Form discharging arches over all openings the thickness of the walls and inverts where required. All cuttings for skewbacks and splayed reveals and rakes of gables, &c., to be properly performed.

Brick Fenders.—1 brick fender for fireplaces on the ground-story and sleeper walls 4 feet apart for the wood floors, and provide and fix a dozen 9-inch air bricks where directed for ventilation under the floors.

Trimmer Arches.—Brick trimmer arches with proper feather-edge springing pieces to be turned under all the chimney-slabs of the upper rooms. Flues of brickwork formed 9 inches × 14 inches, properly pargetted, and wrought-iron chimney-bars to each opening $2\frac{1}{2}$ inches × $\frac{1}{2}$ inch, with 14-inch bearings, turned up at each end.

Hoop-iron Bond.—1 tier of hooping iron $1\frac{1}{2}$ inch × $\frac{1}{16}$ inch, 2 inches in width, pitched and sanded and hook lapped at the angles through each of the stories. All door and window frames to be bedded and pointed in hair mortar, and all stone, timber, and other work properly inserted and leaded.

Dig and steen a cesspool 8 feet deep and 3 feet 6 inches clear diameter, domed over, and manhole and stone cover formed to ditto. Form drains to communicate with the same in the required direction, and with an inclination of not less than 2 inches in 10 feet, 6-inch glazed stoneware pipe drains with socket joints, to be purchased of Bastick, St. Thomas, Exeter; and 4-inch branch ditto communicating therewith from the several waste pipes and sink stones about the offices, with all necessary bends and union pieces. Small brick cesspools formed with covers, perforated for stack pipes and dished sink stones 4 inches thick, 2 feet square, with 8-inch cast-iron air-traps let in. Should any defects arise from the imperfect execution of the drains, the Contractor will be held accountable for any future expense incurred for correcting the defects.

Paving.—Pave with brick on edge bedded in sand the coal-cellar and the cellar in the basement.

MASON.

The following external dressings are to be executed with the Hockworthy or Bampton stone taken from the best beds of the quarry, free from defects, worked, sunk, and moulded in strict conformity to the several drawings and detail drawings, and set on its natural bed in fine mortar with clean arris, pointed joints, and with all necessary cramps, dowels, or joggles.

Plain worked *quoins* to the building and chimney-shafts of irregular sizes with stone dowels in the joints. The several doorways to have stone outer jambs with arched heads, the reveals of the principal entrance moulded.

The heads of all the windows and doors where indicated to be worked in stone with moulded corbels as shown.

The *stone reveals* of the principal window openings and lintels to be moulded and back rebated to receive a wood frame for sliding sashes, which are to be used in the dining-room, drawing-room, study, and best bedrooms. The *subsills* in one length, and to be of sufficient width for bedding the frame with groove and iron water bar in ditto, and the lights divided by stone mullions and transoms to correspond with the reveals, and stone joggles in all joints of reveals. The remainder of the window openings and those of the offices to have plain square reveals, oak mullions 6 inches × 5 inches, rebated to receive the frames for metal casements with groove and lead tongue in the sills; the intermediate joints in the longer mullions to have copper dowels 6 inches long and $\frac{3}{4}$ inch diameter.

Moulded Strings.—Stone moulded string courses to the bay window, &c., as shown, with solid quoin pieces to all angles and lead cramps in the heading joints. Carved gurgoyles tailing through the walls, the carvings to be executed in the most skilful manner; moulded, weathered, and throated coping where shown, cramped in all the joints.

A stone tablet formed 9 inches thick with sunk moulding, the panel left for device to be inserted in the north front.

Chimney Shafts.—The chimney shafts and solid bases of ditto to be wholly of stone, with plugs and lead cramps in all the joints.

Steps.—The principal entrance doorways to have steps of stone, of approved quality, worked and rubbed in the best manner, rebated and back jointed and properly pinned to the walls.

Pave the vestibule with rubbed paving 2 inches thick, neatly jointed in straight courses, and set in fine mortar.

The external doors of offices to have *steps* of tooled stone 10 inches × 7 inches, morticed for doorcases, and the internal doorways of paved offices tooled sills 9 inches × 3 inches.

Pave with 2½-inch rubbed paving laid in mortar on a bed of concrete, a width of 4 feet as a margin all round the kitchen, and 2½-inched tooled paving on a bed of hard rubbish well rammed over the scullery, the larder, and lobby leading thereto.

Pave the water-closet from the yard with 2½-inch stone, a 6-inch stone sink in the scullery 4 feet long and 3 feet 6 inches wide and 2-inch stone bearers.

Chimney-pieces.—All chimney openings to have rubbed stone inner hearths. Provide and fix in the ground-story 3 veined marble chimney-pieces of the prime-cost value of 8*l.* each, and one of 5*l.*, and inch slabs of the same or similar material 1 foot longer than the respective openings, 20 inches wide, notched for the jambs. Bath stone, or other of equal quality, boxed chimney-pieces in the principal rooms of the chamber-story at the value of 35*s.* each prime cost, and in the nursery and Butler's pantry at 25*s.* each. Inch rubbed stone slabs for same, 1 foot longer than the openings, 20 inches wide. 2 sets of plain jambs and mantels, 6 inches wide, in attics, with notched slabs 3 feet feet 6 inches long and 18 inches wide. The kitchen to have strong 2-inch jambs, haunched mantel and shelf for 5 feet opening, and rubbed slab 6 feet long, 2 feet wide. Stone jambs and mantel to scullery fire-place.

The *wine-cellar* to be fitted up with slate sawn shelves 22 inches wide and 1½ inch thick, tooled on the edges and half-brick bearers, and divisions built in cement allowing for at least 3 sets of shelves and 3 compartments.

The *steps* of cellar to have tooled stone 10 inches × 7 inches, 3 feet 6 inches long, set in cement and pinned into the walls.

Provide for cutting all holes for ironwork, &c.; mortices to be made for all doorcases in stone sills.

CARPENTER AND JOINER.

Materials.—The timber to be the best yellow Memel, Riga, or Dantzic fir, sound and free from sap and all defects, and the deals to be best yellow Christiana deals and battens free from sap and large knots and well seasoned. No joists or rafters to be more than 12 inches apart.

The *roofs* of the house to be framed according to the drawings with framed principals where shown. Tie-beams 8 inches × 4 inches, principal rafters 7 inches × 4 inches, truss framed with 1¼ inch wrought-iron bolts, with head, nut, and washer, with cast-iron king bolt head 14lbs. weight, ¾-inch round heel, bolts 2 feet long, with head, nut, and washer at feet of rafters; braces 4 inches × 4 inches; ridge and purlins 6 inches × 4 inches; struts to do. where required, 4 inches × 3 inches. Templates 5 inches × 3 inches, under all the ends in the walls. Wall plates 4 inches × 4 inches, all round the walls. Pole plates 4 inches × 3 inches. Common rafters 4½ inches × 2 inches, framed together and pinned with oak pins over the ridge; binding joists 7 inches × 2½ inches, ceiling joists spiked to rafters, and binders 3½ inches × 1½ inch. Deal, rough-tapered pieces, to be spiked to the sides of each rafter, 16 inches long and 3 inches wide, to form a sufficient cant to the eaves. Inch deal gutter boards and bearers, and inch close boarding for lead over the bay window, with proper fall and drips to gutters, and cesspools where the water is taken off. Rounded rolls for lead. Inch valley boards 7 inches wide, and layer boards to eaves, and small tilting fillets to all rakes and gables. The verge boards of the gables to be 1½-inch English oak, wrought and framed to plain terminal on the apex, and shaped at the other end, the edges moulded, and small oak bed moulding fixed on the upper edges, according to the drawings.

Provide and fix all necessary *centring* and turning pieces for Bricklayers and Masons; make the *moulds* for Plasterers, &c., and give the necessary attendance to Plumbers.

Lintels to be inserted in the walls over all apertures, as wide as the thickness of the inner reveals of the openings require, and 9 inches deep to the 3-light openings, 6 inches deep to those not under 3 feet wide, and none less than 4 inches deep with bearings 9 inches at each end, and templates 5 inches × 3 inches. *Wood bricks* to be placed for fixing the Joiner's work not more than 18 inches apart in all jambs, and not more than 3 feet apart for all skirtings.

The joists throughout the chamber story and the attic to be 10 inches × 2½ inches, with bearings 6 inches at each end, and trimmers 10 inches × 2½ inches; those of the staircase landing and floor over the cellar 8 inches deep. Wall-plates 4½ inches × 3 inches, continued all round the walls, scarfed and hook-lapped at the angles, ground joists 5 inches × 3 inches, and sleepers 4 inches × 3 inches.

Prepare and fix fir quarter partitions where shown on the plan, framed heads and sills 4 inches × 3 inches, posts, braces, and door-heads 4 inches × 4 inches, quarters and puncheons 4½ inches × 2¼ inches.

A tier of herring-bone strutting to be fixed across each of the floors. Inch battens 2½ inches wide, 9 inches apart, fixed to walls of the principal rooms in ground-story. Attic story ¾-inch deal folding-floor, and ¾-inch square skirting and backings 4½ inches high.

The chamber-story throughout inch deal folding-floor with mitred borders to slabs. Inch torus skirting 8 inches high, and narrow grooved grounds.

The principal rooms in the ground-story, the hall, &c., with 1¼-inch yellow batten, straight joint floors, heading-joints, tongued; the skirting inch rebated and moulded plinth, and backings 9 inches high, with moulded base 6 inches girth, and narrow grooved grounds and backings.

The angles of all skirtings to be properly mitred and tongued.

The floors in the kitchen, Butler's pantry, and china closet, inch yellow folding-floor, and ¾-inch square skirting, and backings 9 inches high.

The principal stairs to be 1¼-inch yellow deal treads; inch risers tongued, blocked, rounded, and moulded nosings mitred to cut string; strong fir carriages and bracketing, the bottom step a veneered curtail. 2-inch deal, rebated, sunk, and moulded, outside strings cut and mitred to risers and framed to open newels: 1½-inch moulded wall strings, housed for steps. Inch octagon balusters dovetailed to treads, except 4, which are to be iron ditto, with strap ends and screws; 1¼-inch staff-beaded and sunk aprons to well-holes, and moulded nosing; wainscot newels 4 inches square, wrought and framed, chamfered on all the edges, and moulded stoppings formed to chamfers; moulded caps and bases to newels mitred round 8 inches high, and handsome moulded wainscot handrail 4 inches × 3 inches to suit the stairs, with scroll at the bottom end, and a wrought-iron moulded newel to ditto, the rail to be French polished. The back staircase to be inch deal treads and ¾-inch risers with rounded nosings, and housed to close strings, 1¼-inch wall string and framed outside ditto. Deal turned and framed newels. Inch square bar balusters and wainscot rounded handrail, with ramps and mitred caps to newels, and French polished.

The stairs leading to the cellar enclosed with 1½-inch deal bead flush and square spandrel framing, and return with a door in do., and rebated beaded stops, the door hung with 4-inch butts with 6-inch iron-rim dead lock, and brass barrel spring on do.

The window lights of the dining-room, drawing-room, and study, and best bedrooms to be fitted up with deal-cased frames, with half mullions of stone on the outside, moulded to correspond with the stone jambs to transoms of ditto perforated for sashes. 1½-inch oak chamfered bar sashes made for 1 square to each light, and hung to frame on one side only with guide rollers, and patent lines and brass pulleys. The 3 light windows to have the sashes of the centre compartment hung to the outer boxing by additional pulleys over the mullions. Brass sash-roller fastenings.

The remainder of the window openings to be fitted with deal moulded and rebated frames, with mullions and transoms as shown prepared for metal casements.

Metal frames and 1½-inch metal casement sashes of approved pattern hung with strong brass butt hinges, and improved turnbuckle fastening with brass knobs.

The attic windows to have inch rounded window boards and bearers, and staff-beaded linings tongued to frames.

The windows of the one-pair story 1¼-inch moulded window backs, framed to correspond with the window lights, 1 panel under each, tongued beaded capping. Inch tongued and splayed linings; inch framed grounds 4 inches wide, and moulding 5 inches girt round do.

The staircase to have tongued and staff-beaded linings and rounded window board.

The windows in the principal rooms of ground-story 1½-inch bead butt and moulded front shutters prepared for 2 in height. Inch framed back flaps 1¼-inch moulded window backs to correspond with the lights and elbows, tongued beaded capping splayed elbows and soffits, wide beaded caps and soffits to boxings. Inch bead butt back linings. 2-inch proper boxing grounds 6 inches wide, and mouldings 8 inches girth, narrow grooved grounds and return linings where necessary. 3-inch butts for the front shutters and the back flaps hung with 1½-inch strap hinges, 3 to each shutter; spring bow shutter bars to each window, and all the front shutters: a brass knob and brass shutter latch to each.

The windows of the offices in the ground-story 1¼-inch tongued and staff-beaded linings; those of the Butler's pantry and kitchen to have 1¼-inch bead flush, and square shutters to fold back next the wall, and 3-inch butt hinges, spring shutter bars, and 6-inch flush bolts.

The remainder of the windows in offices framed guard bars

⅝-inch diameter, and wrought iron framed rails; gauze wire casements to larder window.

The room-doors of attics and nursery and inner doors of office to be of 1½-inch 4-panelled square doors, hung with 3-inch butts and 6-inch iron-rimmed locks; ¾-inch framed and rounded linings, and beaded door stops round do.; ¾-inch framed grounds 4 inches wide, and single moulding one side.

The doors in the principal rooms of the one-pair story, 1¾-inch 4-panel, moulded both sides, 2 feet 8 inches wide, 6 feet 8 inches high in the clear, hung with 4-inch butts, and 6-inch 2-bolt mortice locks, box furniture; inch rebated and beaded linings; inch framed grounds and dovetailed backings and mouldings, 4 inches girth on each side.

The cellar door 2 inches 4-panel bead flush and square, 2 feet 10 inches × 6 feet 6 inches, hung with 4-inch butts, and fitted with a solid copper-warded dead-lock P.C. 12s. Doorcase 4½ inches × 4 inches, rebated and beaded, tenoned to stone sill with 1-inch tongued and rounded linings and backings.

The internal doors of the principal rooms on ground-story, 2-inch 6-panel doors, 2 panels in height, 2 feet 10 inches × 6 feet 10 inches, moulded both sides, and framed with double tenons for mortice locks, hung with 4-inch butts, and 7-inch 3-bolt mortice locks with handsome china furniture, 1¼ inch double-rebated and double-beaded jamb linings; inch framed grounds and dovetailed backings and mouldings, 8 inches girth both sides. All the openings in which the wall exceeds 1 brick in thickness are to have the linings framed in 5 panels the set, and moulded as the doors.

The partition between the hall and vestibule 2½-inch deal moulded folding sash doors, moulded lower panels on both sides, hung with 4-inch butts and rebated mortice lock, 1¼-inch rebated and staff-beaded linings. Inch framed grounds and moulding, 8 inches girth on both sides, two 12-inch flush bolts.

The principal entrance and the garden doors 2½-inch deal framed and braced Gothic-headed doors, filled in the lower panels both sides with tongued beaded boarding, 5-inch butt hinges; best drawback mortice lock, and two 12-inch barrel bolts, with brass knobs; doorcases 4½-inches × 4 inches, rebated, beaded, and moulded, with Gothic heads, and inch deal tongued and staff-beaded linings inside.

The back entrance and water-closet outer doors 2-inch framed, ledged, braced, and filled in with beaded and tongued boarding. Fir proper doorcases 4 inches × 4 inches, with the heads haunched, &c., as the drawing; wrought-iron strap hinges; 6-inch iron-rim locks, and two 10-inch barrel bolts to outer doors, and a Norfolk thumb latch on the water-closet.

The 2 water-closets in the house to be fitted up with inch Honduras mahogany clamped flap and beaded frame, moulded nosing, tongued on 2½-inch brass butts, and ½-inch skirting 4 inches high. Inch mahogany seat and deal framed bearers. Inch riser to remove, with brass buttons, dished hole in seat, and beaded ditto for handle. Deal beaded casing to pipes with rebated grounds, butt hinges, and cupboard locks.

A cistern of 1¼-inch deal, feather-tongued and dovetailed, to contain about 200 gallons, for supply of closets, fixed with strong fir bearers.

The lower water-closet to offices to have inch feather-tongued and rounded seat, ¾-inch skirting 6 inches high, dished seat, lined cover, the riser of inch deal.

Provide and fix a stone cistern in the offices, with fir framed bearers 6 inches × 4 inches, and front rails and muntins 4 inches × 4 inches, wrought and framed with oak bottom rail 6 inches × 6 inches. 2-inch deal bottom and 1¼-inch wrought, tongued, and beaded front to contain 500 gallons.

Two 1¼-inch deal ledged and beaded flaps, 2 feet square, to be formed in the ceiling and roof for access to cisterns, &c., with staff-beaded linings, hung with 2½-inch butts, and 2 necked bolts to each.

Provide for fitting up cupboards in the bedrooms, and for fittings in the pantry, or slate shelves, &c., in the larder, the sum of twenty pounds.

TILER.

All the roofs are to be covered with the best plain tiling, or other tiling of equal quality, with courses of ornamental tiles, where shown on the drawings, laid to a proper gauge, bedded and pointed with hair mortar on strong oak laths. Moulded tile ridges and ornamental crest set in cement, and the heading joints secured with oak pins. Tile valleys formed where required.

PLUMBER.

The gutters to be covered with milled lead 7lbs. to the foot super, and the flat over the bay window, &c.; all edges to turn up 8 inches under the tiling, and 6 inches against the walls. Flashings of 5-lb. lead to the straight parts of gutters, and stepped ditto 18 inches wide to all rakes; the flashing burnt in where requisite.

A cesspool to be formed over flat, with 3-inch socket pipe soldered on to convey the water to head, and large lead rose over ditto.

The cistern to be lined with 8-lb. bottom and 6-lb. sides. The stone cistern in the offices to be supplied with soft water by means of stack pipes from the roof 2½-inch overflow pipe, and ½-inch standing waste in ditto, with brass washer and waste. Inch service pipe with brass bib cock to the sink in scullery.

The water-closet cistern to have stout inch service pipe from pump, 1½-inch waste pipe brass washer and waste, ½-inch warning and wire pipe, and ¾-inch service to closet.

The upper water-closet fitted up with best pan apparatus, queen's-ware basin, large D trap, &c., complete, and 4-inch soil-pipe of 8-lb. lead. The lower closet fitted with glazed earthenware hopper, basin, and stool, cock, complete.

A 2½-inch brass barrel force-pump of the best description to be provided and fixed where directed, for the service of the cisterns over water-closets, and with a nozzle to discharge ditto. 1½-inch suction pipe from well, and ¾-inch branch service to copper, with bib-cock.

The sink to be fitted with a 3-inch brass bell-trap and grate, and 2½-inch waste pipe.

Provide and fix a sufficient length of 5-inch cast-iron eaves gutter with brackets, about 5 feet apart, the gutters to be cast with solid ends where required, and OG socket pipes for conveying the water to rain pipes; also 3-inch cast-iron rain-pipe, with cistern heads and shoes.

PLASTERER.

The laths to be of the heart of fir, and the lime is all to be run into putty before being used for the hair mortar.

Lath, plaster, set, and whiten the ceilings of the attics and of the offices in ground-story, and lath, plaster, flote, set, and whiten all the other ceilings throughout the house, and the soffit of stairs.

Render, set, and colour the sides of rooms in attic-story and those of the offices in ground-floor; and render, flote, and set for paper, the sides in the principal rooms of the ground-story and best bedrooms.

The sides of the staircase, hall, and vestibule trowel-stuccoed smoothly for paint. The backs of all the chimney openings rendered.

All quirks to be neatly cut.

Form angles to all the chimney-breasts, and external arrisses, and the splayed angles to reveals of the openings of the staircase, with the Martin's cement.

Run plain plaster moulded cornices, 10 inches girth, round the principal rooms in the ground-story, and do. 5 inches girth round the principal rooms of one-pair, and the hall, the vestibule, and staircase landings.

PAPERHANGER.

The principal rooms in the chamber-story to be papered with a paper, value 2½d. per yard, cut close, and the other rooms on that floor with 1½d. per yard paper; as also the china closet and Butler's pantry. The dining and drawing-rooms, and the study, to be hung with a paper value 6d. per yard, and a border at top and bottom, value 2d. per yard.

GLAZIER.

The windows described to have sashes and cased frames are to be glazed with the patent plate glass, and the remainder throughout the house with seconds Newcastle crown in casements, well puttied and back puttied, and all to be left clean and perfect.

PAINTER.

All the wood and ironwork externally is to have 4 coats of good oil colour previously well knotted, the external doors finished an oak colour; the principal entrance-doors and the sash frames grained in imitation of oak and varnished.

The woodwork internally throughout the house is to be prepared and stained with a preparation in imitation of oak twice done; the ironwork internally painted 4 times in oil. The stuccoed walls to be painted 4 times in oil, and flatted as required.

Specification of the several Works required to be done in Building a FARM-HOUSE *and* OFFICES *at Plash Close, Leicestershire, for E. B. Hartopp, Esq., of Dalby Hall.* T. L. DONALDSON, *Architect. May,* 1844.

EXCAVATOR AND BRICKLAYER.

Dig out the ground to the widths and depths required for the foundations of the several walls, drains, tanks, &c. ; bed and well ram the trenches previous to the bricks being laid, and fill in the earth on each side as the walls are carried up ; remove the earth to a depth of 1 foot over the space below the floor of parlour. Wheel or cart away all superfluous soil and rubbish.

Materials.—The *bricks* to be sound, hard, and well burnt ; the best to be picked for the external work, and laid with a neat close joint and pointed. All the *work* to be regularly carried up, and the joints to be well flushed up. The inside face of the scullery and beer-cellar to be worked fair for lime whiting. The *mortar* to be composed of the best fresh stone lime and clean sharp sand, in the proportions of 3 measures of sand to 1 of lime.

The Work.—Build all the walls, chimney-breasts, &c., of the lengths, heights, and thicknesses shown by the drawings, with footings 4 courses high, laid to one uniform level throughout.

Bond.—Lay in two places in the ground-story, and in one in the chamber-story, 4 courses in height in Barrow lime mortar, as bond to all the walls throughout, of the whole thickness ; and also to the chimney-breasts ; and in each case lay iron hoop, pitched and sanded, 3 lengths in the 14-inch walls, and 2 in the 9-inch walls.

The *gables* to be finished with a projecting course of bricks, cut on the edge or made for the purpose, laid in *Barrow-lime* mortar ; and a course on edge, in Barrow lime, above the same. The upper parts of the *chimney-stacks* to be finished in a similar manner, with the blocks formed as shown. The *chimney-shafts* to be very carefully worked, and the flues pargetted and cored. Turn half-brick trimmer to the fire-places in chamber story. The set-off to the *plinth* to be also formed with splayed bricks, as described above, as well as the corbelling course to the chimney-shaft at end of cheese-room ; and the reveals and arches to the windows and doors. The arches to be gauged. Bed and point all sash and door frames, also all plates and other timbers, where necessary.

Build *sleeper and fender walls* in parlour, 18 inches high, in

1 brick, with 2 courses of footings in 1½ brick; build the piers and wall in the *beer-cellar* 2 feet 6 inches above the ground, to carry casks; also all brickwork necessary to carry partitions, steps, &c. Provide and fix to the *fire-place* in kitchen a wrought-iron chimney-bar, 3 inches × ⅝ inch, and to the other fire-places, chimney-bars 2 inches × ⅜ inch.

Build an *oven* in the scullery of the size shown on the plan, and provide and fix all necessary ironwork for the same.

The wall at back of *privy, pigsty, coal and wood-shed*, &c., and the fence-wall in continuation of the same, to be finished with brick on edge in cement, and the front wall of pigsty to be finished in a similar manner. Form a *cesspool* under the privy, the whole size of the privy, and 6 feet deep, with 1 brick sides. Build a 9-inch barrel drain, with ½-brick rims, the lower half rendered with cement, from the sink in the scullery to the cesspool above described.

Convey the water from the different rain-water pipes by 6-inch earthen pipe drain, secured at the joints and laid with a proper fall, to a *tank* in the yard. The *tank* to be 6 feet square and 8 feet deep from the surface of the ground, with 1 brick sides and division in the opening in same, brick-on-edge bottom, the bottom and sides rendered with cement; arched top, 9 inches thick, with man-hole in same, having oak ledged flap, with iron ring, and oak kerb round.

Pave the kitchen, passage, dairy, beer-cellar, and cheese-room; also the closet and lobby between kitchen and scullery; the scullery, the space between scullery and privy, the pigsty and dust-bin with *bricks, flat in land and grouted.* Form a *channel* in the space between scullery and privy; and provide and fix a stone with 6-inch iron *bell-traps* let in. Form a channel in the outer part of pigsty, and provide and fix a 5-hole sink stone.

MASON.

Provide and fix to all the external doorways solid *stone steps*, with rounded ends where shown, and mortices for door-cases, and similar steps into dairy and to the door-way from kitchen to scullery. Fix in the scullery a *stone sink* of the size shown, cut and pinned to the wall at the back, and supported on brick piers, with rounded corners and hole cut and rebated for trap. Provide and fix to all the windows stone sunk and weathered *sills*, throated. The covering and cornice to bow to be as shown by the drawings, properly set and jointed, and securely plugged at the joints.

Provide and fix to the openings in one-pair story flat stone or slate *chimney-pieces*, with slabs and hearths complete; the jambs and mantels to be 5 inches wide, and shelves 7 inches wide. The kitchen chimney-piece to be similar, but the jambs and mantel to be 9 inches wide, and to have wood shelf on cantilever brackets. The scullery to have a stone slab and hearth, but no chimney-piece. The parlour to have a Portland stone boxed chimney-piece, with slab and hearth.

The *finials* on gables, the label to front door, and the panels with shields, to be of *Ancaster stone*, properly worked and set. The gate piers to have stone caps 22 inches square, and 6 inches thick, weathered on top and throated on the underside. 4 *hinge stones* to be provided and fixed in these gates the full size of the piers, and 6 inches thick, morticed for the fangs of the hinges.

SLATER.

Cover the roofs of house and scullery with countess slates laid to a proper gauge, and cut close to gables and valleys, each slate to be nailed with 2 zinc nails; put cement filleting to the gables. The roofs of the coal-shed, privy, and pigsty to be also covered with slates.

CARPENTER AND JOINER.

Materials.—All the timber to be Baltic or Memel fir, except when otherwise described. *Roofs.*—Construct the roofs as shown by the drawings with timbers of the scantlings marked thereon.

The end of one of the gutter plates to be supported by a binder 9 inches × 4½ inches, and secured to the same by a wrought-iron strap 2 inches × ⅜ inch; this binder to be wrought where it shows below the ceiling; 2 other *binders* to this part of the roof, 8 inches × 3 inches; struts from these binders, 4 inches × 3 inches, to support the purlin. The part of the roof over kitchen to have also 2 binders 8 inches × 4 inches, with struts to the purlins. The part over parlour to have 2 pairs of principal rafters, 7 inches × 4 inches, halved together and spiked at the top and secured at bottom to tie-beams 8 inches × 3½ inches × ⅜-inch wrought-iron straps (no struts). *Joists* to form floor of room in roof 8 inches × 2½ inches, with 1 tier of herringbone strutting; ceiling joists to the remaining portion of the main roof, 3½ inches × 2 inches, trimmed for stairs, &c., plates throughout 4½ inches × 4 inches. Provide blocks on templates for ends of ridges, purlins, &c.; line the soffits and ends of rafters with ¾-inch deal beaded. Cover the roofs with ¾-inch battens, 2½ inches wide, laid to a proper gauge for the slates, with eaves and valley boards and tilting fillets. The *gutters* to be of inch deal on strong framed bearers laid with a proper fall, and having 2-inch drips. The ashlaring to the sides of the room in roof to have sill and quarters 3 inches × 2 inches. Enclose the stairs to room in roof above the ceiling with quarters 4 inches × 2 inches.

Lintels to all the openings throughout 18 inches longer than the internal opening, of the width required by the thickness of the wall, and where to windows or doors under 4 feet to be 3 inches thick, and above that in proportion. *Wood bricks* to all openings or wherever else necessary to receive Joiner's work. *Partitions* in chamber-floor to have heads 4 inches × 4 inches, sills, posts, and door heads 4 inches × 3 inches, quarters 4 inches × 2 inches.

The *joists* to chamber-story to be 8 inches × 2¼ inches, with trimmers 8 inches × 2¾ inches, and 1 tier of herringbone strutting in each room. Joists to closet by back stairs 4 inches × 2 inches, plates for all the joists 4½ inches × 4 inches.

Partitions on ground-floor to have heads and sills 4 inches × 4 inches. Door-heads 4 inches × 3 inches, posts 4 inches × 4 inches, quarters 4 inches × 2½ inches, 18 inches apart for brick nogging, rough nogging pieces about 2 feet apart. *Bearer* under the front wall *over bow* 14 inches × 9 inches. Provide and fix kerb on piers in beer-cellar 9 inches × 3 inches, and on the dwarf wall in same 4½ inches × 3 inches. Lay oak sleepers for the *floor of kitchen* 4 inches × 3 inches, and joists 4 inches × 2½ inches.

Provide turning pieces for all the arches of doors and windows, and centring to all recesses, &c., where required; provide also all blocks, fillets, templates, &c., wherever necessary, and attend, cut away, and make good after other workmen.

Coal-shed, Pigsty, &c.—Put rafters to the coal-shed 4½ inches × 2 inches, purlins 6 inches × 4 inches, and plates 4½ inches × 4 inches; filling-in lintel to doorway 4½ inches × 4 inches. Inch proper ledged door in the opening hung with 16-inch cross garnets, and having a thumb-latch. Fir wrought and rebated doorcase 4 inches × 4 inches, and oak sill 9 inches × 3 inches. Put fir wrought and weathered kerb 9 inches × 3 inches to the *dust-bin*, and one 1¼-inch sliding door and frame 18 inches square in front of same near the bottom. The *pigsty* to have rafters 4½ inches × 2 inches, and plates 4½ inches × 4 inches. A rough ledged gate hung with hook-and-eye hinges in the outer opening, with large wood button, and two posts 5 inches × 4 inches secured to the brickwork. The *privy* to have rafters 4 inches × 2 inches, plates 4 inches × 3 inches, oak joist to floor 4½ inches × 2 inches, and oak plate 4 inches × 3 inches. Inch deal floor, ¾-inch deal skirting 4½ inches wide on floor and seat. The seat and riser to be of inch deal on strong bearers with hole cut; 1¼-inch clamped flap and beaded frame hung with 2½-inch butts. Inch proper ledged door hung with 14-inch cross garnets, with thumb-latch and 6-inch bolt. Fir wrought and rebated doorcase 4 inches × 3 inches, and oak step and riser.

Joiner's Work to Chamber-story.—The *floor* in the room in roof, and the 3 back rooms on chamber-story to be *lathed* and *plastered*, and in the front rooms, passages, &c., on chamber-story, to be best *white deal folding*. The *skirting* to bed-room and in closets to be ¾-inch deals 4½ inches high.

The *windows* to have oak wrought, framed, rebated, and chamfered jambs and heads 4 inches × 4 inches, double rebated, and double moulded mullions 4 inches × 4 inches, and oak-wrought, framed, sunk and weathered sills 4½ inches × 3½ inches; ¾-inch deal splayed and staff-beaded linings to all the windows; those on the staircase and to the room in roof to have inch deal rounded window-board and bearers, and the others to have the *window backs plastered*, as the walls, with deal beaded capping and skirting.

The *doors* to rooms to be 1½-inch deal, 4-panel, square, hung with 3 butts; that to the room in roof to have a thumb-latch and small bolt, the others to have 6-inch iron-rim locks. The *closet doors* to be 1¼-inch deal, 4-panel square, hung with 2½-inch butts, and having closet locks. The door to room in roof and to closets to have 1¼ inch rebated and double-beaded jamb linings, the room doors to have similar jamb linings, and inch narrow framed grounds and OG moulding on one side only.

The *closets* by side of fire-places to have 1¼-inch framed and beaded fronts, and square doors, with 2½-inch butts and closet-locks. The closets to be 7 feet high, with back, top, and bearers, and OG moulding, as cornice. *Provide* 50 feet super deal *shelves* to be fixed where directed in these closets.

Put square angle-staff to the external angles.

The *stairs* up to the room in roof to have inch deal steps and risers, with rounded nosings and fir carriages, housed into 1¼-inch strings, square, framed, and chamfered newel, deal rounded handrail, and square bar balusters. Rounded nosing, and ¾-inch staff-beaded apron-lining to well-hole.

Ground-floor.—Inch yellow straight joint *floor* in parlour, with border to slab. Inch torus skirting, 8½ inches high, with narrow grounds and fillet to room, and ¾-inch square skirting, 4½ inches high, in closets.

The frames and sills to *windows* throughout this story to be as described for the chamber story. Those in the kitchen to have ¾-inch staff-beaded linings, and 1¼-inch deal rounded window board and bearers. 1¼-inch bead butt and square shutters and hanging stiles, with rule joints so as to fold back against wall, rule joint hinges, and 2½-inch butts and strong latch bar fastenings, with mortice plates, &c. The window in cheese-room to be finished in a similar manner. The *windows* of beer-cellar and dairy, as well as those in the kitchen closet and on the staircase from kitchen, to have cement linings and window board, and wrought-iron guard bars ⅞-inch diameter, with flapped ends secured to head and sill. The openings to beer-cellar and dairy to be also filled in with perforated zinc. The *windows* in parlour to have 1¼-inch deal, 2-panel moulded and bead butt front shutters on splay, inch-deal bead butt back flaps, inch bead butt back linings, 1¼-inch moulded and bead butt backs and elbows, beaded capping and elbow caps; 1¼-inch proper boxing and OG moulding, ¾-inch narrow return linings; 2½-inch butts and 2-inch back flap hinges, brass shutter knobs and latch bar fastenings; inch deal mitred and double-beaded lining to inside of mullions of bow window. The scullery to have oak sash frame and sill, as before described; and inch ledged shutters hung with 16-inch cross garnets, and having wood latch bar fastening.

The *doors* from scullery to yard to be inch deal proper ledged, hung with 18-inch cross garnets, and having Norfolk latch and two 8-inch barrel bolts, fir proper door-case, 4 inches × 4 inches. The doors between scullery and kitchen to be inch deal proper ledged, hung with cross-garnet hinges, and having Norfolk latches, and to one of the doors two 8-inch barrel bolts. The doors to stairs and closet from kitchen to be 1½-inch 4-panel square, with 3-inch butts and Norfolk latches; the 4 last-mentioned doors to have 1½-inch rebated and double-rounded jambs. All the other internal doors to be 1½-inch 4-panel square, except the door to parlour, which is to be moulded and square; all to be hung with 3½-inch butts, and to have 6-inch iron-rim locks, 1¼-inch deal rebated and double-beaded jambs, but narrow framed grounds and OG moulding on one side only. The back entrance-door to be 2-inch deal, 4-panel, bead butt and square, with 4-inch butts, Norfolk latch, and two 9-inch barrel bolts. The front entrance-door to be 2-inch 4-panel moulded and bead butt, with similar hinges and bolts, and draw-back spring lock. Fir proper doorcases, 5 inches × 4 inches, to both these doors, with beaded stops round inside.

The *closets* in kitchen to have 1¼ inch framed and beaded fronts, and square doors, in 2 heights, and those in parlour $1\frac{1}{4}$-inch framed and beaded fronts, and moulded and square doors; $2\frac{1}{2}$-inch butts closet locks in the parlour and to the lower doors in kitchen, and knobs and buttons on the upper doors. Provide 55 feet superficial of inch shelves and bearers, to be fixed as directed in these closets. The *dresser* in kitchen to have $1\frac{1}{2}$-inch deal top, framed legs and bearers and beaded rails, drawers with inch deal joints and $\frac{3}{4}$-inch dovetailed sides, and bottoms, and brass handles, 3-inch deal shelves over, and inch cut standards; inch pot-board and bearers below dresser. The *closets* in parlour to be 7 feet high only, with inch top and bearers, and OG moulding as cornice. Square angle staff to the external angles.

The *staircase* from ground to chamber-floor to have $1\frac{1}{4}$-inch steps, with moulded nosings, inch risers, and strong fir carriages; $1\frac{1}{4}$-inch beaded wall-string, $1\frac{1}{2}$-inch framed and beaded string and double-beaded capping, square framed and turned newels, square bar balusters, Honduras mahogany handrail, 4 iron balusters with straps and screws countersunk; $\frac{3}{4}$-inch beaded aprons and rounded nosings to the well-hole. The *staircase* from kitchen to room over to be as described for that leading from chamber-story to room in roof.

The *gates* to yard to be $2\frac{1}{2}$-inch framed and braced, filled in with $1\frac{1}{4}$-inch ploughed, tongued, and beaded battens, and hung folding, with strong wrought-iron hook and eye hinges, with fangs let into the hinge-stones, and having strong swing bar fastening with staples, plates, &c., complete. Weathered and grooved capping, on the top of these gates. Put a rough framed *open gate*, 8 feet wide, in the fence wall between coal-shed and old buildings with strong hinges and wood button and oak posts 5 inches square, well secured to the brickwork, with ends let into ground and spurs.

Put oak *casing to pump* in scullery.

Provide for the *slate shelves* in dairy, including brackets and bearers, the sum of 10*l.*

PLASTERER.

Twice limewhite the *walls* of scullery. Lath, plaster, set, and white or colour the ceiling and partitions of room in roof and chamber story; render, set, and colour the walls. Lath, plaster, set, and white the *soffits of stairs*, and lath, plaster, and set or render, set, and colour the sides. Lath, plaster, and set the *ceilings* in ground-floor except the parlour, which is to be floted in addition; white the whole, run a cornice 9 inches girth in the parlour. Render, flote, and set the sides of the parlour, and render, set, and colour the sides of kitchen, passages, dairy, and cheese-room. Twice limewhite the walls of the *beer-cellar.* Plaster the *window-backs* and cement the inner reveals and window boards described in the joiner. Run cement *skirting* 6 inches high in kitchen, passage, dairy, and cheese-room. Cut all quirks where required. Lath, plaster, set, and white the *ceiling,* and render, set, and colour the sides of privy.

PLUMBER.

Cover the *ridges* with 5-lb. lead 18 inches wide, properly secured by lead-headed nails. Lay the *gutter* at back of chimney on scullery roof with 6-lb. lead, turned up 6 inches against the brick-work, and 8 inches under the slates. Put 5-lb. *flashing,* 6 inches wide, to this gutter, and 5-lb. step flashing, 12 inches wide, at end of scullery-roof where it abuts against the house. Lay the *valleys* with 6-lb. lead, and the centre *gutter* of main roof with 7-lb. lead, turning up 8 inches under the slates; form a shoot through the walls into the rain-water head.

The *eaves gutters* to be 4-inch cast-iron semicircular gutters on strong brackets, the *rain water-pipes* to be 3½-inch cast-iron with shoes and lead, ornamental cast-heads with overflow pipes or shoots.

Provide and fix a 3½-inch lead *pump* with bucket, sucker, &c., complete, and 2-inch suction pipe from tank in yard. Put 2-inch waste-pipe from the sink with 3½-inch brass grate and bell-trap. Put 2-inch lead pipe to bring down water from bow, communicating with drain.

SMITH.

Provide the *chimney-bars* and the hoop-iron described in Bricklayer's work, and the wrought-iron *straps,* &c., described in the Carpenter's work. Provide and fix *iron casements* to the windows with hinges and fastenings complete, one to each of the windows in the room in roof and chamber-story, 2 to the large window in the kitchen, 2 to the bow, and 1 to each of the other windows on the ground-floor. All the windows to have wrought-iron *saddle bars,* ¾ inch × ⅜ inch, securely fixed.

PAINTER.

Paint all the wood and ironwork inside and out 4 times in oil.

GLAZIER.

Stop in all the sashes with Newcastle crown glass, securely puttied and cemented both sides.

Cowsheds, &c.—Dig out the foundations for the several walls, &c.; build the walls as shown by the plans. *Pave* the whole with brick flat in sand, grouted, and form channels, as shown, with iron stable gratings in stone kerbs. Build 9-inch barrel *drain*, with half-brick rims, rendered in cement, communicating with a *cesspool*, 5 feet diameter and 8 feet deep, with half-brick sides. Finish the gables with brick on edge, in cement.

Put solid stone steps to the doorways, morticed for doorcases.

The *roofs* to be constructed with ridge, 9 inches × 1½ inch, rafters 4 inches × 2¼ inches, purlins 7 inches × 4½ inches to the smaller shed at end, and 6 inches × 4 inches to the remainder, with 3 ties or binders 9 inches × 3 inches, and struts 4 inches × 3 inches; plate 4 inches × 4 inches; filling-in lintels 5 inches × 4 inches. 1¼-inch rough ledged doors, hung with cross-garnet hinges, and having wood latches, and fir solid frames 4 inches × 4 inches.

Allow for troughs and divisions in cow-houses the sum of 10*l*.

Specification of FITTINGS, *&c.*, FOR STABLE AND COACH-HOUSE. THOMAS L. DONALDSON, *Architect.*

N.B.—The basement was used for the hay and corn store; the entrance or ground-floor for the coach-house, harness and cleaning-rooms; the one-pair, with an incline from the stable yard, for a 10-stall stable; the two-pair floor was appropriated to the living-room for the coachman and grooms.

BRICKLAYER.

Form circular recesses at back of hay-racks in stables.

Turn 9-inch arches for the floors over the basement.

Form the *under floors* of stables with lava laid to currents on a surface of concrete over the arches, as also the floor of coach-house between the wheel stones, described in Mason's particular, and the floor of cleaning-room in a similar manner; the floor of basement to be also lava on concrete 6 inches thick over the whole surface.

Form the drains, as shown on the plans, those from the stalls in stable to be 4-inch glazed earthen pipe drains, with small brick cesspools rendered in cement to receive gratings; the centre drains to be 6-inch pipe, communicating at the end with upright iron pipe described in Smith's work. The drains from the bottom of this pipe in the basement, and also that from the area, to be 9-inch pipe drains, are to connect with the drains of house, with 6-inch branch drain from the soil-pipe. The drains to be all laid to a proper current, and the joints and connexions very securely made in cement. A trapped cesspool to be made at the bottom of the 6-inch iron pipe.

Form the drains or channel for hot-water pipes in floor of coach-house, with half-brick sides, 9 inches × 6 inches in the clear.

Pave the stables with the best hard English clinkers of 2 colours, laid herringbone pattern with square borders. The same are to be laid to regular falls on the asphalte, and well grouted and pointed up with cement. Pave the dung-pit, which is to be 18 inches below the level of the ground, with brick on edge in sand grouted with mortar.

MASON.

Portland stone piers on arches for coach-house doors worked as shown by the drawings, rebated for the doors with slate joggles in the joints, and holes cut for fangs of hinges, &c., morticed for caulkings of iron columns, and as shown on ground plan; York or Bramley Fall plinths for piers, 12 inches thick, and 6-inch York wheel stones, tooled top, sides levelled, plugged at the joints. Portland kerb, 4 inches × 5 inches, to drain for hot-water pipes, worked all round, rebated for gratings, and plugged at joints.

Lay the stable-yard in front of coach-house doors with granite paving.

CARPENTER.

Form *bins* with 1½-inch deal, 3 feet high, wrought both sides, ploughed and tongued, with iron rounded capping on top, 2½ inches × 1½ inch. 1½-inch deal dovetailed *sinks* where shown, on proper bearers.

The *external doors* to be 2-inch deal framed and braced, filled in with inch battens, ploughed, tongued, and beaded both sides, with upper part glazed, hung with 1½ pair of 4-inch butts, to have stable latch, a lock value 15*s.*, and two 9-inch barrel bolts.

Divide the stalls by 2-inch deal partitions, ploughed, tongued, and beaded both sides, cut and fitted at top to the iron top rails, and at bottom to have 3-inch oak plinth 9 inches high, wrought both sides, and grooved and chamfered both edges. Inch deal ploughed, tongued and beaded boarding against walls all round, fixed to inch battens 3 inches wide, secured to walls by holdfasts. 1½-inch plinths, 9 inches high, chamfered and rebated to range with narrow grounds and fillet; deal capping, 4 inches × 1½ inch, rebated and double chamfered to range with the capping of the stall partitions at the highest part.

Cover the boarding at back of manger, and at each end of same in each stall with sheet zinc, fitted over the capping, and close nailed; form a corn-bin where shown, 5 feet × 3 feet, and 3 feet deep with bottom and bearers. Inch cross tongued sides with circular corner, and 1¼-inch framed and beaded top, and clamped flap hung with 3-inch butts. In order to form the 2 end stalls, so as to be convertible into loose boxes when required, provide 2-inch framed partitions, filled in with ploughed, tongued, and beaded battens, with oak capping, 2 inches × ¾ inch, double rounded; these partitions to have cast-iron wheels 6 inches diameter, with brass axles and wrought-iron suspending straps, the wheels to be grooved and to run on a wrought-iron runner; each partition to have a fastening value 10*s*.

The external stable-door next yard to be 2-inch deal, framed and braced, filled in with ploughed, tongued, and beaded battens, hung with 4-inch butts.

The coach-house doors to be 2½-inch folding, framed and braced, and filled in with 1¼-inch, ploughed, tongued, and beaded battens, the upper part to have large open panels for glass, with beads mitred round; the heads of doors to be segmental, and the bottom rails to be notched to pass over the wheelstones. The doors to be hung with Collinge's 42-inch patent hinges, with bolts and nails complete; the fangs to revolve on pivots let into the stone piers, the bottom hinges to be cranked. Each pair of doors to have a drop ring, 14-inch barrel bolts, and a monkey-tailed bolt.

SMITH AND IRONMONGER.

Provide and fix, where directed, on ground and one-pair floors, 18 saddle holders, 18 harness pins, and 12 japanned double hooks for cleaning harness on.

Provide and fix the octagonal cast-iron heel posts in stable, which are to be hollow, 6 inches diameter, of inch metal, with moulded caps and bases; cast-iron OG top rails to stall partitions; cast-iron mangers and wrought-iron circular hay-racks securely fixed; 2 wrought-iron rings to each manger; 2 do. to each heel post with holes drilled, and tapped for same; and 2 rings in each stall fixed to the partitions.

Cast-iron grating in each stall as shown, and 1 do. with bell trap open. Cast-iron grating laid loose over channels for hot-water pipes in the coach-house. 3 gratings, 12 inches × 6 inches, in front walls of stable for ventilation.

Specification and Estimate for proposed KITCHEN FITTINGS, *as per Plan, for a Mansion of the First Class, executed and fixed complete, under the direction of* THOMAS L. DONALDSON, *Architect, by* MESSRS. W. CUBITT and Co.

No.		£	s.	d.
1.	A 6-foot *kitchen range* with 2 winding cheeks, swing trivets, extra large wrought-iron boiler at the back to supply baths, Housemaids' closet, and scullery, with hot water, &c. . . .	38	0	0
2.	A single movement *smoke-jack* with gun-metal wheels and boxes for rollers, and angle spit bearing-bar, door, and frame, fixed complete .	24	0	0
3.	A large cast-iron double *oven* with cast-iron front furnace, and ash-pit, doors, soot-doors, dampers, sliding doors, shelves, &c.	30	0	0
4.	A single steam *hot closet* with cast-iron front and folding doors; wrought-iron mountings, cast-iron steam-shelves, mouldings, pipes, and connexions, &c., complete.	38	0	0
5.	A *hot-plate* with oven and stock-pot stove attached with cast-iron front, sliding-door, mouldings, top-plates, wrought-iron skirting, &c.	25	0	0
6.	A large double *meat-copper*, tinned inside, set in substantial brickwork, with recess, furnace, door and frame, furnace-bars, soot-doors, damper, gun-metal cocks, &c. . . .	20	0	0
7.	2 tinned copper *dish-washers*, with waste pipe, plugs, deal framing, and capping, with supply of hot and cold water to each, fixed . .	16	0	0
	Carried forward	£191	0	0

No.		£	s.	d.
	Brought forward . . .	191	0	0
8.	A large *stone sink*, with waste pipe and grating, with cocks for hot and cold water . .	6	10	0
9.	A wrought-iron spherical *steam-boiler* fixed in proper brickwork, with recess, furnace, and ash-pit doors, soot-doors, damper, bearing and furnace bars, with all necessary pipes, bends, and connexions to supply steam hot closet and Bain Marie pan in kitchen . . .	35	0	0
10.	A range of *stewing stoves* set in brickwork, with cast mouldings and front sliding-doors, wrought-iron skirting, &c.	20	0	0
11.	A large double copper steam *Bain Marie* pan, tinned inside, with steam and water-pipes, stops, cocks, and connexions, fixed in kitchen-table, with 12 tinned copper stew-pans and covers for inside of ditto.	25	0	0
		£277	10	0

Specification of certain PLASTERER'S WORK *proposed to be done at St. Leonard's Lodge, near Horsham, for W. E. Hubbard, Esq.* THOMAS L. DONALDSON, *Architect. April,*

KITCHEN OFFICES.

Ceilings, Walls.—Lath, plaster, flote, set, and twice white the whole of the *ceilings* on ground and one-pair stories. The *walls* of all the rooms on one-pair are to be rendered, floted, set, and twice coloured; the walls of corridor and passages on one-pair are to be trowelled stucco, as also the walls of all the rooms, corridor, and passages.

Parian.—The *skirtings* to all the rooms, corridors, and passages on ground and one-pair, and also to back stairs, are to be Keene's or Parian cement square skirtings 9 inches high; and all *external angles*, as also the jambs of openings to main building.

MAIN BUILDING.

Rooms, Lobbies, and Secondary Stairs.—The *ceilings* of all the rooms and lobbies on one-pair are to be lath, plaster, flote, and set, and twice white; those to rooms, lobbies, and passages on ground-floor, are to be lath, plaster, flote, and set, and twice distemper. The family bed-room, Mrs. Hubbard's boudoir, and Visitors' bed-room, to have *moulded cornices* 16 inches girth, with 2 enrichments as shown. The room over library and the adjoining dressing-room to have *moulded cornices* 20 inches girth. The remainder of the rooms (except day and night nursery and bath-room), and the 3 small lobbies to have *moulded cornices* 11 inches girth. The sitting-room and drawing-room on ground-floor to have *moulded cornices* 30 inches girth, with 2 enrichments and dentil blocks, as shown, and twice distempered. The library and own room to have *moulded cornice*, with panelled and enriched frieze, 3 feet 8 inches girth, with 3 enrichments. The dining-room to have *moulded cornice* 28 inches girth, with 1 enrichment and modillion blocks, as shown.

The *walls* of all the rooms on one-pair are to be rendered, floted, and set; the *partition* in bed-room over own room, nursery, bath-room, and water-closet, to be lathed, plastered, floted, and set. All the lobbies on one-pair and the secondary stairs to be trowelled stucco. The *walls* to sitting-room, and drawing-room, and library, ground-floor, to be rendered, floted, and set. The walls of all the other rooms, lobbies, water-closets, &c., and also the walls of secondary stairs, to be trowelled stucco.

The secondary stairs and passage at foot of do. to have Keene's cement *skirting* 9 inches high, and the dining-room to have a do. dado, as shown; and all external angles are to be in Keene's cement; as also all the back linings to windows on ground and one-pair stories.

CENTRAL HALL, PRINCIPAL STAIRCASE, AND VESTIBULE.

Ceilings and Cornices.—Lath, plaster, flote, set in gauged stuff, and twice distemper to coved ceilings, and run the mouldings in plaster to form panels, as shown. The cornice below cove with modillion blocks, frieze, and architrave, to be in plaster, as shown. The ceiling to entrance vestibule to be lath, plaster, flote, and set, and twice distemper, with plaster moulded cornice, with modillion blocks, frieze, and architrave, as shown. The soffit of beams, &c., to be lath, plaster, flote, and set in gauged stuff, with sunk panels in same, with small moulding round. The entablature over Ionic order on ground-floor and to stairs to be done in plaster, with enrichment in panel 6 inches girth, as shown on the drawings.

Parian Work.—All the *walls* and *dado* to central hall, staircase, and vestibule, are to be in Keene's or Parian cement, trowelled for paint on a Portland cement ground. Run the *moulded plinths and surbase mouldings* on ground and one-pair, also the mouldings to form panels on walls of ground story, with fine Keene's or Parian cement, as shown; and the *reveals* to openings, blanks, and doors at end on one-pair, and to recesses on ground-story, to be also in ditto. The openings, blanks, and doors at end on one-pair to have fine Keene's cement or Parian moulded *architraves*, 12 inches girth on side next hall, and staff-bead and double-quirk on side next lobbies: and the blanks and doors on ground-story to have architrave mouldings 12 inches girth. The principal *stairs* to have a Keene's or Parian cement moulded *skirting* 9 inches high.

The *caps and bases* to all the columns and pilasters to be moulded, and cast in the finest Keene's or Parian cement *polished*, securely fixed to wood core. The *shafts of columns and pilasters* on ground-floor to be in Scagliola, in blocks to imitate approved specimens of Sienna marble, polished and fixed to wood core. Those on one-pair to be similar, but to imitate such marbles as may be selected.

All the *window backs* throughout are to be rendered in Roman cement. *Dub out* with plain tiles and cement for all projections of cornices, &c., as may be requisite, and for the panels on walls with 1 course.

Generally.—The whole to be executed in the very best manner, and to the entire satisfaction of the Architect. All defects that may appear within twelve months to be made good at the expense of the Contractor. All the sand, lime, and laths required for the work will be provided by Mr. Hubbard.

Specification for BELLHANGER'S WORK *for W. E. Hubbard, Esq., St. Leonard's Lodge.* THOMAS L. DONALDSON, *Architect.*

Height of entrance-floor of house 15 feet 9 inches, including depth of floor.

Height of entrance-floor of offices 11 feet 3 inches, including depth of floor.

Height of bed-room floor of house, 12 feet in the clear.

Height of bed-room floor of office, 10 feet in the clear.

Provide and hang the following bells, with all necessary levers, pulls, and cranks, concealed wires in tubes, complete in every respect, and finished off in the most workmanlike manner, to the entire satisfaction of the Architect, who is to be consulted as to the direction of the various wires, and other particulars connected with the hanging, previously to their being fixed. The several bells to be bright, of the best bell-metal, of assorted tones, so as to be clearly distinguishable the one from the other, and mounted on best plate carriages, with scroll, spring pendulums, inscribed with names of rooms; part hung in passage near Servants' hall, and in passage over entrance-floor.

House.—A bell from the entrance portico, with handsome brass knob and sunk plate; 1 bell, with sunk lever boxes for 2 pulls each, from dining-room, drawing-room, sitting-room, cabinet, library, and own room; the knobs, &c., for each of these not to be included, but to be matter for future selection and extra charge. 1 pull knob and call striking bell from hall to passage, near day nursery over vestibule. 1 bell and pull in spare or small room adjoining vestibule. A dinner-service bell and pull near door, from dining-room to kitchen.

Bedroom Floor, House.—A downstairs bell and upstairs bell to be provided for the own bedroom, and 2 pulls complete to correspond therewith, to be fixed in the own bedroom and adjoining boudoir; the two former in bedroom near the bed, the two latter in boudoir on each side of the fire-place, with sunk lever pulls, and ivory or glass knobs, *marked up* and *down respectively.* Ditto, ditto, to Visitors' bedroom over drawing-room and to adjoining dressing-room; ditto to bedroom over library, and ditto to bedroom over own room, and ditto to young Ladies' bedroom next Visitors' bedroom—but merely to be prepared with pulls near the beds in the last three rooms. A downstairs bell and an upstairs bell to be provided in common for the day and night nurseries, with 2 pulls in each of these two rooms connecting therewith. 1 bell and pull for bath-room, and 1 *ditto from Mr. Hubbard's dressing-room.* Provide and fix to the own bed-chamber and Visitors' bed-chamber a good brass *night-bolt,* hung with pull, and proper appurtenances complete.

Offices.—Provide and fix a bell from the principal Servants' entrance to offices with knob and plate; 3 bells from bedrooms over offices, each with a pull fixed near the positions of the beds.

N.B.—Zinc tubes in walls and iron plates painted.

General Specification of Works necessary to be done in laying on the GAS *in the Parish Church of* , *and of certain* FITTINGS *to be supplied for the purpose of Lighting up the said Church.* THOMAS L. DONALDSON, *Architect.*

Meter.—Provide and fix a best water (or dry) meter, of sufficient power and capacity to supply the several lights required, and 20 more.

Provide and lay to the meter, where directed, a 2-inch service-pipe from main in street; insert 2-inch best town-made main-cock, with proper lever-key to stop off gas from the church, continued from outlet to the meter with 1½-inch iron tube, and all necessary lead work, brass union-joints, &c., to carry the 1½-inch pipe from same along roof of vault under vestibule, and to rise up with same behind column at south-east angle of Churchwardens' pew in eastern aisle, through ceiling into gallery. Insert, at a convenient height, in the 1½-inch rising tube a 1½-inch Carter's patent valve, for the purpose of regulating the lights inside the church. Insert in 1½-inch rising tube, below the valve, a 1½-inch iron fee-socket, with inch outlet; and carry from thence inch iron barrel to ceiling, and along same in the aisle, outside of such partition, to supply lights in vestibule, staircases, &c. Put in proper union connexions, and carry best stout ⅝-inch tin pipe from same to, and provide and fit up 1 bracket-light on each of the staircases (pattern to be chosen). 1 stiff bracket light in each of the two lanterns in vestibule, and 1 ditto to new lantern in fanlight over principal entrance. Furnish and fix a new fanlight lantern for same, glazed complete. Continue 1½-inch iron pipe from rising tube under gallery floor to front range of gallery pews; put on a 1½-inch fee-socket, and continue along under pews in front of organ-loft, with 1¼-inch iron barrel to west gallery, and diminishing to 1 inch at angle; continue inch iron barrel to end of west gallery. Lead off from other outlet of 1½-inch, at south-east angles of galleries, along east gallery, with inch iron barrel. Insert in the main tubes, above described, proper union connexions, and lead with best stout ⅝-inch tin pipe to, and provide and fit up 5 standard lights; to be fixed on partition, in the same manner as the present oil lights, and of the same pattern as the present standards in each of the galleries east and west; 2 ditto standard lights, 1 in each gallery, on partition, to range with the present standards; also 1 ditto standard light in back gallery east, in the same position as the present oil light; also 2 ditto standard lights in organ-gallery, where the present standards now are; and 2 ditto standards to be fixed on handrail of upper Children's gallery, one on each side of the organ. Also to insert proper union connexions, and lead with best ⅝-inch metal, tin pipe to, and provide and fit up in the same position as the present hanging lights in front of galleries, 8 handsome double-light pendants (of a selected pattern), to be suspended from universal joints. Lead with similar connexion-tubes, &c., between floor and ceiling to and provide and fit up 1 similar pendant over baptismal font, in such position as shall be directed. Put in connexions, and carry similar supply tubes to and provide and fit up 1 bracket light in lantern, in west entrance under tower, of the same pattern as in vestibule; and 2 ornamental brass brackets (of a selected pattern) against the north wall, one on each side the communion-table, in the same position as the present lights. Provide and fit up to each light a proper argand burner, of such size as shall be directed; as also a clear plain 7-inch chimney and a wrought and engraved moon shade, of such pattern as shall be chosen, with the proper holders for same.

Provide and fix to each of the 2 bracket-lights on the ground-floor and staircases, a glass bell consumer, with proper chain, hooks, brackets, &c., for fixing. Total number of burners, 43.

The tubes generally to be laid between the ceiling and floors; the whole of the work to be finished in the most complete manner, with the best materials and workmanship, including all proper union joints in iron barrel, fee-sockets, bends, &c.

Do all the works necessary for laying on and concealing the main and supply-pipes, whether in cutting away and making good to floors, plastering, or wainscoting; and repair all the paint-work, polishing, or other works injured in consequence of and during the works.

CONDITIONS.

The whole of the fittings and pipes are to be completed on or before the   day of   . The amount of the contract is to be paid to the Contractor within twelve months, unless any deficiency appear in the works within that period; in which case, unless such defect or deficiency be made good forthwith by the Contractor: or the parish is to be at liberty to make good and remedy the same, and the expense thereof is to be deducted from the balance then due to the Contractor. The Contractor is to undertake to clean the whole of the works, fittings, and glasses, and keep them in proper order for the first twelve months, and to state at how much per annum he will undertake to clean and keep in order the pipes, meter, fittings, and glasses each succeeding year. The lamps now in the church will be removed by the party, who now supplies them.

The Vestry not yet having decided on lighting the church with gas, the Committee cannot bind themselves to accept any tender, nor will they bear any expense for designs or specification.

FORM OF TENDER.

I hereby undertake to provide all necessary labour, materials, fittings, and other things required, and to execute the works described in the specification hereunto annexed, and necessary for lighting up the parish church of ; and to clean and keep in order for the first twelve months the pipes, meter, fittings, and glass for the sum of .

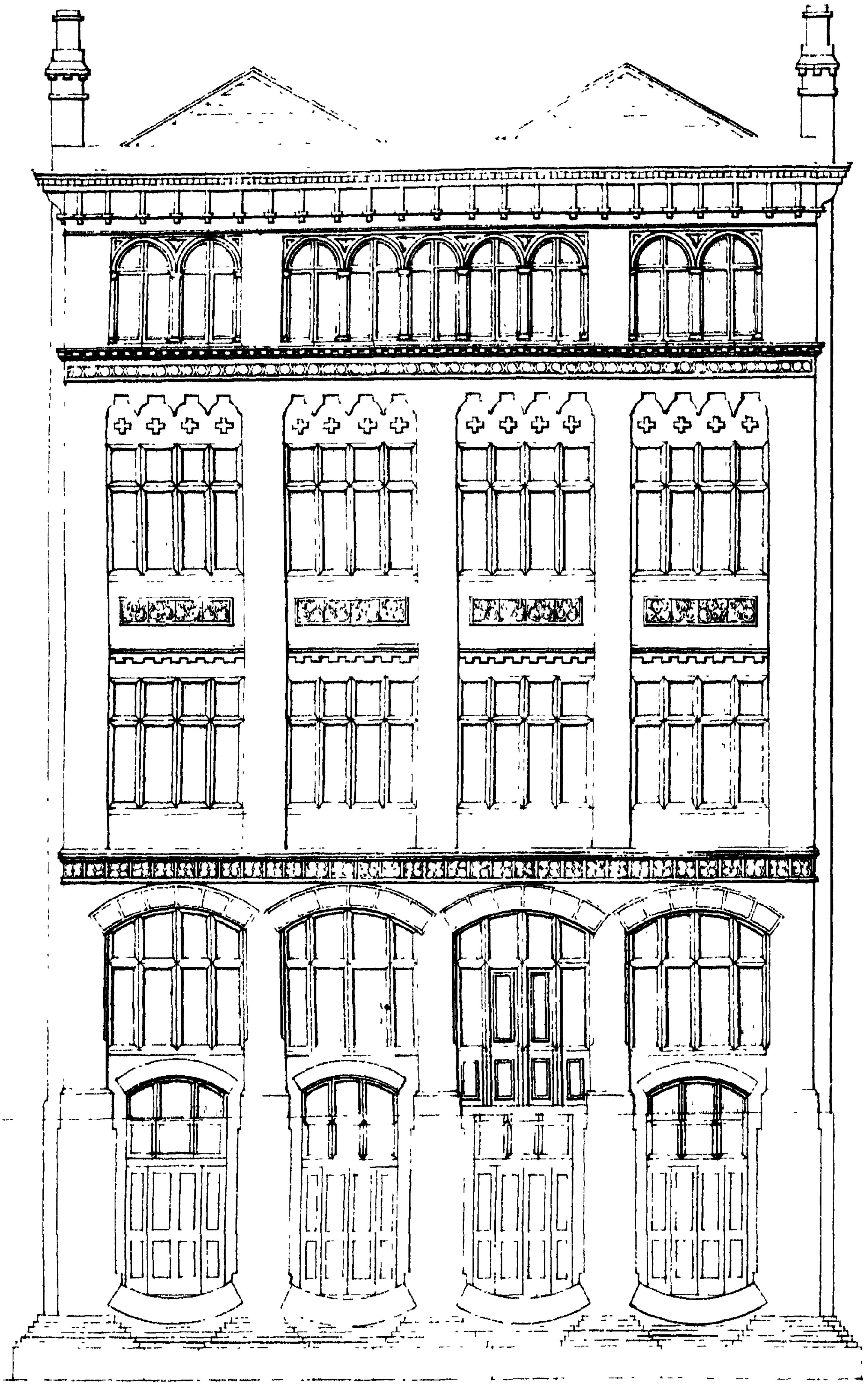
To clean and keep in order the pipes, meter, fittings, and glasses each succeeding year, for the sum of .

Specification of Works to be done in Erecting, Building, and completely Finishing the Premises, consisting of SHOP AND WAREHOUSES, *fit for Occupation, in Fetter Lane, in the County of Middlesex, for Messrs. Shaw and Co., Printers, Publishers, and Booksellers, agreeably to the Plans, Sections, Elevations, Conditions, and Contract Agreement.* THOMAS L. DONALDSON, *Architect.* 1857.

THE whole of the Artificers' works are to be executed in strict conformity with the provisions of the Building Act, and in the most workmanlike manner, as though they had been specifically and severally so described in this specification.

Fees.—The Contractor is at his own expense to pay all fees to District Surveyor, Surveyor of Pavements, Commissioners of Sewers, Water Company, and for all matters.

Provide all necessary *hoards,* with good and sufficient boarded footpath outside ditto, with posts and handrailing (with as little obstruction as possible to the public). Care is to be taken that all materials required should be delivered at such times of the day and so discharged, as shall cause as little inconvenience as possible to the traffic and thoroughfare.



Vincent Brooks, lith

MESSRS SHAW'S PREMISES, FETTER LANE.

T. L. DONALDSON, ARCHT

Shoring.—The Contractor is to thoroughly shore up and secure all the surrounding buildings, and from time to time, when required by the Architect so to do, to clear and cart away all rubbish, useless scaffolding, or other matters or things. Leave the premises and every part of the said works whole, perfect, clean, and fit for occupation, and the windows cleaned.

DIGGER.

Drains and Foundations.—Dig out for a 6-inch earthenware drain from the farthest extremity of the rear of the premises completely through the house and vaults into the sewer in front. Also for the several branch-drains into ditto and for cesspools ; ram in the ground perfectly sound all round the same. Dig out for all the several foundations and basement floors, according to the sections, as also for the sleeper walls, piers, chimneys, and other things required; shore and secure the adjoining ground, take down the several walls that may interfere, and grub up all the old foundations.

Clear and cart away all the superfluous rubbish, soil, filth, or dirt arising from the foregoing, and also from time to time, as often as directed so to do by the Architect; fill in with concrete all the old cesspools and other holes, and do all matters and things connected with the digging, that may be required for the due completion of the works.

Concrete.—Form *concrete foundations* under all the walls of the depths and thicknesses shown by the drawings, to be composed of clean Thames ballast and ground stone-lime in the proportion of 8 to 1, properly mixed together and thrown into the trenches from a height of 6 feet at least.

Fill in the spandrils with concrete, and over the top of vaults in front to receive the street paving.

BRICKLAYER.

All the cement used to be fresh and pure Sheppy, and mixed half-and-half with sharp clean sand.

The *mortar* is to be mixed upon a brick or stone floor or platform prepared for the purpose ; and is to be composed of the best grey stone-lime used quite fresh, and free from core and lumps, and sharp clean river sand free from impurities, using one part of lime and three parts of sand.

All the *walls* with their several projections are to be built of

English bond with hard well-burnt grey stocks, and are to be well flushed in every course through the whole thickness quite solid. All the inside face of the walls to be left fair flat joint, and jointed for whiting, and no four courses to rise more than 11¾ inches, and the headers in all cases to bond through into the interior of the work.

Erect and build the several walls, chimney-piers, and all other brickwork, including the vaults, area-walls, arches, divisions, and all other matters and things, agreeably to the plans, sections, and elevations, using the best hard and well-burnt *grey stock bricks*, the lightest in colour and best formed to be picked out of the stocks and used for facing the back fronts.

The general surface of the *front* to the street is to be faced with the *best malms*, and tuck pointed, and the dressings with red and black bricks, as shown on the drawings. The *arches* to windows in both fronts to be set in Portland cement.

All the walls to have a thickness of *asphalte* just above the footings, except to vault wall. Inverted arches under all the basement openings. The two uppermost courses of all the walls and parapets to be laid in cement. Those parapets or walls not capped with stone are to have an oversailing course and brick on edge both set in cement. The *front chimney-shafts* to be faced the same as the principal front, and the back shafts as the back front, and all to go to the height as shown in the elevations, and to have ornamented compo chimney-pots 3 feet high, set in cement with cresting and plain tile flaunching rendered in cement; all the interiors of the flues are to be left quite smooth without rough projections, and each flue to be pargetted.

Bed and point all door and window-frames with good lime and hair mortar.

Provide and fix cambered *chimney-bars* 2½ inches × ⅜-inch, 9 inches longer at each end than opening of fireplace caulked up and down.

Turn *trimmer arches* to all the fireplaces in cement, and immediately after turning the same, fill up level in cement to the under side of the slab.

Place 6-inch *earthenware tubular drains* from the extreme back part of the premises into the sewer as described in the digging, and 4-inch junction ditto into the same from the water-closets, &c.

Construct a *cesspool* in a front vault, the sides of 4-inch brickwork in cement with a circular brick bottom, and render the whole ½ inch thick in cement, the size to be 3 feet square and 2 feet 9 inches deep. Put a York stone *trap* across the same, and cover the whole with 2½-inch York stones jointed on the trap.

All the levels of the drains and cesspools to be regulated so as to produce a clear fall into the sewer.

Attend and cut away and make good where requisite for the Carpenters, Plasterers, Masons, Bellhangers, Plumbers, Gasfitters, and all other trades, and do all other matters and things necessary as *Bricklayer's work* to make the whole complete.

Build all the sleeper and other walls and piers in basement for floors, &c.; put brickwork for bottom step of stairs.

Pave the cellars with brick on edge, hard stocks in mortar.

Cut out and make good to all walls where requisite, to give them a fair face.

Underpin such parts thereof as may be necessary, and leave the same sound and secure, and allow the sum of 20*l.* for the said underpinning, the whole or part to be deducted if not required.

Find all necessary rough stones for corbels, and fix and wedge in the same in cement; and provide and fix York paving slabs to form projections of cornices. Make good all water and other pipes solidly into drains.

Provisions.—*Provide* 1 *rod* of extra brickwork in mortar, and 1 in cement for underpinning or otherwise, to be deducted either in whole or in part, as the case may be, if not required.

Provide to each story of all the premises 2 *tiers of iron-hoop bond,* 1½-inch × $\frac{1}{16}$-inch, and 3 lengths to each tier, laid in 1 course in cement; to be omitted, however, where the chain-bars are introduced over windows.

Prepare the surface of the wall of the buildings eastward, cut away the projecting parts, cut out all woodwork, templates, bond, &c., and make good with cement; as also all decayed or irregular parts, so as to leave a fair face for the plasterer to render it in cement, and colour it.

Observe that the 3 *central piers of the front* (for the height of 7 feet 3 inches) between the windows of the shop, one, two, and three-pair floors, are to be carried up in *Portland cement* to give them greater stability.

SLATER.

Cover the several roofs with the best large Bangor Countess slates, with 2 copper nails to each slate, and not less than 2-inch lap from upper to next lower slate, double courses under the eaves; the whole to be left sound in every respect at the conclusion of the job.

Cisterns.—1½-inch slate bottom rubbed on the underside to the cisterns, and 1½-inch sides, all grooved and put together with red lead, and secured with inch wrought-iron bolts, the bottoms to be cut and pinned into the walls; cut all holes for pipes, &c.

Slate Washhand-stand.—1-inch rubbed slate top for washhand-basin in Principal's W. C.; with holes for basin and pulls, and ½-inch rubbed slate skirting, 4 inches wide on top.

PLASTERER.

Ceilings.—Lath, plaster 2 coats, set and white all the ceilings.

The *walls* throughout to be left plain brickwork and only coloured, except in Principal's water-closet and counting-house. Render in cement, pointed and coloured, the back wall of the premises in Crane-court, as high as the old rough brickwork goes, and the return south wall of the house in Fleur-de-lis-court.

Trowelled stucco on the brickwork or lath walls of Principal's W. C. and counting-houses.

CARPENTER AND JOINER.

All the timber to be Baltic, well seasoned, free from large and loose knots, shakes, and sap, and *all the scantlings to hold the full dimensions specified.*

Roof.—There are to be two pairs of trusses to the roof, the tie-beam of each pair to be scarfed together, or to be in one continuous length; also 4 half principals at hipped ends.

Pole plate, 4 inches × 4 inches, blocked up to the necessary height for gutter fall; angle-ties and dragging-pieces, 12 inches × 3 inches. The timbers of the principals, which show below the ceilings, are to be wrought and beaded on the lower edge. Collars or ceiling joists 4½ inches × 2 inches.

The *gutters* are to be of inch yellow deal on bearers, laid to a current of 1½ inch in 10 feet, with 2-inch drips, and to have angle fillets as per margin. Line the underside and upright side with ¾-inch deal, staff beaded, square cisterns at ends of gutters next the shoots into the rainwater-pipe heads.

Prepare opening, 2 feet square, with inch-deal ledged door, leading to gutters, with two 4-inch neck bolts, and 1½-inch deal tongued linings.

Floors.—The four upper floors to have fir girders, 12 inches × 10 inches, cut down, reversed, and bolted; the sides wrought, the soffits having ¾-inch deal, double staff-beaded casing; joists 9 inches × 3 inches notched down on the girders; trimmers 9 inches

× 4 inches. Form where shown on the plans in each floor a lift. Wall-plates under the ends of joists 4½ inches × 3 inches.

Basement-floor.—Joists 5 inches × 3 inches, sleepers 4½ inches × 2½ inches; tiers of herringbone strutting to each of the four floors.

The *five floors* to be laid with yellow battens to hold the full thickness of 1¼-inch wrought and laid folding, with fillets all round against the walls, cut out of 2-inch square slips, instead of skirtings, except in the counting-house, where there will be 1-inch torus skirting, 9 inches high, with grounds and backings.

2-inch deal *framed enclosures*, as shown on the plan of entrance-floor, and section, to entrance-lobby and counting-houses. The lower part 4 feet 6 inches high, panelled OG and square, and the upper part for the height of 4 feet with sashes, and the rest of the upper part panelled.

The *doors* of counting-houses to correspond, and fitted with all suitable hinges and locks.

The *partition* between counting-houses to be moulded both sides.

The *lobby* at entrance to have 1½-inch bead flush and square soffit, fir solid rebated beaded frame, and side sashes to entrance-doorway; and hang thereto, as also to the inside framing, a pair of 2-inch bead flush and square folding doors, the upper panels glazed and fitted with patent swing hinges of the best description to the inner door, and 4-inch butts, 3 to each door, to the outer. Put to front door a proper patent cased lock of the best quality, value 20*s.* prime-cost, and fit both doors with bolts, hooks, &c. The entrance-door to have 2-inch oak rounded step on cast-iron open riser, 1¼-inch deal bead flush and square lifting shutters to side lights and to doors, with stubbs and plates, shutter-lifts and thumb-screw fastenings and shoes at angles. ¾-inch round wrought-iron guard bars to fan-light, screwed to frame inside.

All the *other doorways* in walls are to have 1½-inch rebated and beaded linings, and 2-inch 4-panel square doors hung with 3½-inch stout butts and good mortice locks. Form 1½-inch deal enclosures to the water-closets attached to the stairs on each floor, and hang thereto 1½-inch 4-panelled square doors, with proper locks, latches, and bolts to ditto.

The 2 *workmen's closets* to have 1¼-inch deal seats and risers on strong bearers, 1¼-inch clamped flaps and beaded frames, and brass hinges, ¾-inch deal skirting 3 inches wide over the seat.

The *water-closet for the principal* on the half-landing from the shop-floor to have inch polished Honduras mahogany riser and clamped flap and frame, hung with 2-inch brass butts and cedar seat, with hole in ditto for basin, and flat box inside seat for paper; narrow beaded mahogany skirting round seats and returns; mahogany candle shelf.

All the *seats*, &c., are to be so framed together, and secured by screws, as to be easily taken to pieces for the purpose of inspection when required, the seat being made to slide in a groove for easy removal. Deal casing and grounds to pipes.

Enclose under the washhand basin with 1¼-inch framed and beaded front, moulded, and square doors, with 2½-inch butts and brass knob turnbuckle.

The *skylight* over back part of basement is to have 3 bearers 9 inches × 4 inches, with longitudinal bearers 6 inches × 2½ inches against wall, 6 inches × 4 inches intermediate, and 11 inches × 4 inches for gutter, and to carry ventilator, and 2½-inch deal finished thickness; deal sashes, tongued at the junctions, and with saddle-back fillets over the joints. Form framing for ventilators, with louvers to move up and down the whole length, and covered with glass. Form a gutter with bearers and 1-inch deal laid to a proper fall, with drips and cistern head at the end. The ventilator to have oak weathered and throated sill 6 inches × 3 inches, and fir head and posts 4 inches × 4 inches; the louvers to be of ¾-inch deal.

The *roof over water-closet* building to have plate 4½ inches × 3 inches, rafters 4½ inches × 2¼ inches, and battening for slating as before described.

Dust-bin.—Allow for a *dust-bin*, complete in every respect, to be fixed in one of the front cellars.

Shelving.—Provide and fix on brackets, where and as shall be directed, 100 feet super. of 1-inch deal shelving.

Windows.—The *windows* on the staircase and to the closets are to have deal-cased frames, oak sunk sills, 2-inch sashes, double hung, with brass pulleys, best lines, and iron weights. The back elbows and soffits are to have the brickwork left plain without linings, except in Principal's water-closet, which is to have square framed back and beaded linings to window.

The *rest of the windows* are to have fir solid moulded frames, oak sunk and weathered sills, and 2-inch casements; the upper divisions to be hung on pivots where practicable, and in other cases on butts at the lower edge, with a wrought-iron hinged quadrant bar to stop the sash when open, with proper lines, hooks, &c., to all; and 2 of the lower lights of each window to be hinged so as to open when required for cleaning, but at other times to be screwed up. All the sashes to be rebated and beaded at the meeting of the upper and lower, and all the inner sashes to have the bottom rails rebated and throated with metal water-bars in the sills.

The *windows in counting-house* to have 1¼-inch deal tongued linings, framed in moulded panels, and staff-beaded on edge, and 1¼-inch moulded window backs, with beaded capping. The soffit to be in Keene's cement in 3 panels, moulded to correspond with the linings.

The *upper front windows* to have oak rebated and weathered sills 4½-inches × 4 inches, fir wrought, framed, rebated, and beaded frames 4½ inches × 3 inches, screwed to the cast-iron standards, and having circular heads filled in double-rebated and double-beaded transom 4½ inches × 3½ inches.

The *sashes* to be 2-inch deal ovolo; those in lower part to have one half fixed, the other half hinged and screwed up, as before described. The sashes in the heads to be hung at bottom to the transom, with 3-inch brass butts, lines, pulleys, and hooks, and hinged quadrant bar, as before described, to the other windows.

The *columns* of the upper range of windows outside to be of deal, secured to the frames with turned moulded caps and bases.

The *archivolts* to be also of deal, screwed to frames; the spandrils are to be filled in on the outside with ½-inch rubbed slate panels, and in the inside with 2-inch deal.

Inch deal wrought lining, 4½ inches wide, round the frame inside, scribed to brickwork, and 1½-inch tongued and rounded window board.

Form a small opening in wall of staircase to get at cistern, with 1¼-inch deal bead flush and square door, hung with 2½-inch butts, having 5-inch dead lock, and 1½-inch rebated and moulded linings.

The *counter* under front windows ground-floor to be fitted up with 1½-inch deal cross tongued top on strong bearers, 1½-inch framed and beaded dwarf front, with square foldings hung with 2½-inch butts, and having closet locks and 4-inch barrel bolts, 1½-inch deal ploughed and tongued divisions, 1¼-inch yellow batten floor on raking bearers under counter to form bulk-head over basement windows.

The *openings* in front wall in basement to have fir wrought rebated and beaded frames 4½ inches × 4 inches, with mullions and transoms, 2-inch deal 4-panel square doors, the upper panels open for glass, 3½-inch butts, 7-inch iron rim locks. 2-inch deal side lights to correspond with doors; 2-inch ovolo sashes over doors hung on centres, with lines, pulleys, and hooks, and 2-inch ovolo fixed fanlights.

The *raking ceiling* in bulk-head to be plastered, with ¾-inch deal, staff-beaded linings round lower part.

The *Lift* to be formed with fir head and sill, and intertie in each storey, 4 inches × 3 inches, posts 4 inches × 4 inches, and 4 inches × 3 inches; the framing to be secured to wall by iron-hoop ties built into wall and nailed to the timbers. The outside of framing next warehouse to be lined with ploughed, tongued, and beaded boarding, with an opening in each story, lined round with 1-inch deal beaded lining; also in the basement and the three-pair storeys, 1¼-inch framed and beaded front, and dwarf folding-doors hung with 2½-inch butts, and having 6-inch barrel bolts and cupboard locks. The top of lift in three-pair to be covered with 1-inch deal, ploughed, tongued, and beaded on bearers.

Snoxell's Shutters.—Fit up the 3 windows on ground-floor with Snoxell's revolving shutters.

MASON.

All the Bath stone for the strings to be hard weather stone, and all the stone used is to be of the best quality.

York slabs 6 inches thick, 18 inches square under the bases of the 6 cast-iron columns in basement bedded in Portland cement.

York Templates, 5½ inches thick, 18 inches × 14 inches, under the ends of the girders.

Sills.—3½-inch rubbed sills throated under all the windows, and York slabs under the cast-iron standards of windows, as shown by detail drawings.

Cornice.—Provide all the York slabs necessary for the cores of the cornice of front. The upper moulding of which is to be of the hard weather Bath stone, as also the brackets or cantilevers in ditto.

Paving.—*Pave* the basement, where shown upon the plan, and coloured grey, with 3-inch slabs of rubbed York on sleeper walls, bedded in mortar under the joints, and left hollow under the centre of the slabs.

Hearths.—2-inch York stone slabs and back hearths to the several fireplaces shown on the plan.

Landings.—The 3 half-landings, and the 4 other landings of the staircase, are to be of 4-inch York, rubbed on top and tooled underside, well pinned 4½ inches into the walls, and joggled at the joints, and rendered water-tight. Cut hole 18 inches square in landing over cistern, rebate round the same, and provide a 2-inch York cover stone with flush ring let in.

The *steps and risers* of staircases to be of 3-inch York, well pinned into the walls 4½ inches, and with the winders, &c., as shown upon the plan. The lowermost step in the basement to be solid.

Corbels.—Provide No. three 6-inch York corbels under main bearers of skylight at back over basement, 14 inches × 12 inches, with chamfered edges.

Sink.—Provide and fix a 6-inch York sink in basement, 4 feet × 2 feet 6 inches, rounded ends under stairs, and pinned into the wall in cement with York uprights, 4-inch brass grate and lead bell trap, and waste-pipe 2 inches diameter.

Bell-traps.—Fix where directed in paving 2 iron bell-traps and drains leading into main drain.

Portland chimney-piece in counting-house value 25*s.*, exclusive of fixing, with shelf to ditto.

Small York sink 2 feet 6 inches × 1 foot 6 inches in Men's upper urinal closet, with ½-inch supply pipe and tap, and 2-inch waste pipe, and brass bell-trap leading to water-closet.

Street Paving.—Take up the footway and kerb, also any of the carriage-way paving, that may be required for the scaffolding, hoarding, or gangway; and make good and relay the same at the conclusion of the job, providing any new stone that may be required; or should the local authorities choose to have the paving done by their own tradesmen, the Contractor is to arrange with them, and pay all expenses, including fees, &c.

Let in a *perforated plate* to each of the 4 cellar vaults.

Provide all templates that may be requisite for ends of trimmers or other small timbers.

Cut all necessary holes for iron railing, and for the Plumbers, Bellhangers, and other trades, and leave all the Masons' work clean and complete.

18-inch *York feather-edged coping,* set and jointed in cement on low part of old back wall next adjoining premises.

Rubbed York kerb, 6 inches × 6 inches, for area grating, the joints plugged and run with lead.

PLUMBER.

All the lead is to be of the best description, and free from all defects.

Lay the gutters with 7lbs. to the foot super., turning up not less than 6 inches against the walls, and under the eaves of the slates, an average width of 8 inches at every point: hips and ridges, 5lbs. to the foot, 18 inches wide, well secured by lead-headed nails.

Flashings to gutters and against walls, 5lbs. to the foot: 6lbs. to the top of dormer, and 5-lb. cheeks to apron.

The *gutters* in all cases to follow the work as described in the Carpenter's particular, and shown on the plan of roof, and with angle fillets, and soldered round the bottom and up the angles, and rounded courses where return gutters join.

Piping.—Provide a stout 4-*inch soil-pipe* from the uppermost water-closet down into drain, with branch pipe from intermediate closets, the joints well secured, and stopped. Supply pipes.—A stout 1¼-inch service-pipe from the main in the street to serve the upper cisterns, with ball-cocks complete, and 1¼-inch stop-cock and 1¼-inch ferule to main, and put into each cistern a 1½-inch waste-pipe.

Water-closets.—Best patent valve apparatus to principal water-closet, with blue ware basin, with D trap and service-boxes complete. The other water-closets to have Jennings' white earthenware trap-pans, with 1-inch service pipes, and brass pull chain and valves. ¾-inch pipes to sinks and washing-places, brass bib-cock and boss, and wastes leading into trapped soil-pipes or drains, and brass bell-traps. All these pipes are to be so laid out of the level, that they may be emptied in frosty weather, and a cock for the purpose, forming also a stop, to be put in front cellar.

All the plumbing is to be left perfect and complete, and is to be fixed in such directions and parts as shall be specially directed by the Architect, to avoid unsightly appearance or inconvenience.

Urinals.—Provide and fix in each of the 2 men's urinal closets a neat China urinal, with brass bell-trap and pipe, leading into trap of water-closet adjoining, and provide and fix a supply pipe from cisterns, with ¾-inch stop-cock to the same.

Washhand-basin.—Provide and fix to washhand-stand in Principal's closet a blue ware washhand-basin, with overflow arm 1¼-inch waste-pipe, washer and union, ¾-inch service-pipe and valves for waste and service, with brass lever and rod, and ivory pulls, with engraved plates.

Lay supply pipes and taps to sinks, and put thereto 2-inch waste pipe, with brass bell-trap, and conveyed into trapped soil-pipes or drains.

SMITH.

Cambered chimney bars to all fireplace openings, 2 inches wide and ⅜-inch thick, 9 inches longer at each end than the opening, and caulked.

4 perforated cast-iron *coal plates* to cellar vaults.

Bond.—Provide and fix hoop-iron ties as bond to the walls, as may be required by the bricklayer, and double lengths of wrought-iron bond 4½ inches × ½-inch over the openings of one, two, and three-pair windows, the whole length of front, with return at end 3 feet long.

Rain-water Pipes.—2 stacks of 4-inch cast-iron piping, with cistern heads and the necessary bends; the pipe to continue down the slopes of roof over cistern and skylight at back. The water to be brought from gutter at foot of louver ventilator on back part of basement by 2 stacks of 4½-inch cast-iron rainwater-pipe, securely jointed to the lead sockets of gutters without heads, and the lower ends connected with the drains, the joints to be put together with white lead and oakum.

2 *cast-iron scrapers* to front door.

Handrail.—Wrought-iron half round handrail 2 inches × ¾-inch to the staircase, and ¼-inch round balusters, and 1½-inch round newell to basement stairs, 1 baluster to each step.

4 wrought-iron *frames to receive glass* in foot pavement, the glass to be ¾-inch rough cast plate, 5 feet 6 inches × 1 foot 9 inches each.

¾ inch square wrought *iron guard bars* to upper sashes of basement.

Air gratings.—Provide for bricklayer 3 dozen ornamental air gratings, 12 inches × 6 inches, to be introduced under floors, with 2 fronts for ventilation.

The *cast-iron pillars* inside are to be as shown upon the plans and section, with proper caps, bases, and plates; and put together in a good and workmanlike manner, so as to form one continuous bearing from top to bottom.

Cast-iron standards to the window openings of the one and two pairs, as shown upon the section at large, cast-iron bearer under wall across staircase, also under cisterns as per detail drawings.

A speaking tube to be provided and fixed where directed, from the basement to the uppermost story, with a mouthpiece to each floor; that on the shop floor to have a slide.

Provision.—Provide 1 ton of cast-iron in open bearers or struts across the space between the back wall and the old building in the rear; also provide 10*l.* to be applied in strutting, as may be directed, the whole or any portion to be deducted if not required.

PAINTER AND GLAZIER.

Painting.—Properly prepare all the work throughout, and knot, prime, and paint all the outside and inside woodwork, 4 coats in good oil colours the whole of the woodwork on the shop floor, inside and out being grained wainscot, and varnished with the best copal. All the ironwork throughout is to have 1 coat *before delivery,* and 2 coats after being fixed. The chimney-piece in counting-house to be veined marble, and twice varnished.

Glaze the front and back windows of the shop floor with polished plate glass ; also the sashes in lobby at entrance. The partition in shop to be of best seconds Newcastle crown glass. All the front windows of the one, two, and three-pair, and basement are to be stopped in with fluted glass $\frac{3}{16}$ths of an inch thick.

The *skylight* behind over basement to be of rough plate, $\frac{3}{8}$-inch slabs, as shown upon plan, with proper laps, and well puttied.

All the rest of the sashes not before particularized to have seconds Newcastle crown as above.

The upper panels of the doors to the 2 men's urinals to be glazed with fluted glass.

Schedule of Prices for Extras and Omissions.

	£	s.	d.
Digging and carting, per yard cube . . .			
Concrete ditto			
Brickwork in mortar, per rod reduced . . .			
Ditto, in Portland cement, ditto			
Facing with best malms, tuck pointed, per ft. sup. .			
Ditto with best red bricks, in small panels, &c., ditto			
6-in. earthenware pipe drain, laid complete, including digging, per ft. run			
Best Bangor Countess slating, per square . .			
Bath Stone, per ft. cube			
Beds and Joints, per ft. sup.			
Plain faces ditto			
Sunk work ditto			
Moulded work ditto			
3-in. rubbed York paving, bedded in mortar on brickwork, per ft. sup.			
Rubbed, sunk, and throated window sill, 16 in. × 3½ in., rubbed all through, and at back edge, per ft. run			
Fir framed, per ft. cube			
1¼-in. yellow batten floor, per square . . .			

	£	s.	d.
1½-in. deal 4-panel square door, per ft. sup.			
2-in. ditto, ditto, ditto, per ft. sup.			
2-in. deal ovolo casement, hung folding, per ft. sup.			
Deal cased frames, oak sunk sills, and 2-in. deal ovolo sashes, double hung, with patent lines, brass axle pulleys, and iron weights, per ft. sup.			
¾-in. deal, wrought one side, fixed, per ft. sup.			
1-in. deal ditto, ditto			
1¼-in. deal ditto, ditto			
1½-in. deal ditto, ditto			
2-in. deal ditto, ditto			
2½-in. deal ditto, ditto			
3-in. deal ditto, ditto			
Cast-iron in girders, including patterns and fixing, per cwt.			
Cast-iron in hollow columns, ditto per cwt.			
Wrought-iron in straps, bolts, &c., and fixing, per lb.			
Milled lead, and labour in gutters, hips, ridges, and flashings, including wall hooks, nails, &c., per cwt.			
Inch pipe, including joints and fixings, per ft. run.			
Lath, plaster, two coats, and set, per yard			
Roman cement on brick, jointed, and coloured, per yard			
Seconds crown glass and glazing, per ft. sup.			
⅜-in. rough plate, ditto, ditto, ditto, common size, per ft. sup.			
British plate, ditto, and ditto, ditto, under 3 feet per ft. sup.			
Knot, stop, and 4 times in oil, per yard sup.			
Grained wainscot and twice varnished ditto			

Day Work.

	£	s.	d.
Bricklayer, per day			
Labourer, ditto			
Stocks deliv per 1000			
Mortar, per hod			
Roman cement, per bushel			
Sand ditto			
Carpenter or Joiner, per day			
Inch deal, per foot sup.			
1½-in. ditto, ditto			
10*d.* Nails, per 100			
Plumber and Labourer, per day			

Specification of Work to be done and Material supplied in the Erection of an IRON BEDSTEAD MANUFACTORY AND COACH AXLE AND ANVIL WORKS, WITH WAREHOUSES, *&c., in Sheepcote Street, Birmingham, according to Plans prepared by* YEOVILL THOMASON, *Architect, Bennett's Hill, Birmingham, for Messrs. Upfill and Sons. June,* 1854.

EXCAVATION.

The ground to be got out for foundations, cellars, drains, &c., to the depth required, and also to a clear depth of 2 feet under joists of boarded floors on ground-floor, and laid on some convenient part of the site; and when the walls are up, the earth to be carefully rammed to the same and made good.

The yards, floors, &c., to be finished to the levels shown, and well rammed.

All *superfluous earth*, soil, and rubbish not required, to be carted away at the Contractor's expense.

A layer of *smith's ashes*, 6 inches thick, to be provided for all paved floors, and for the under side of boarded floors on ground-floor.

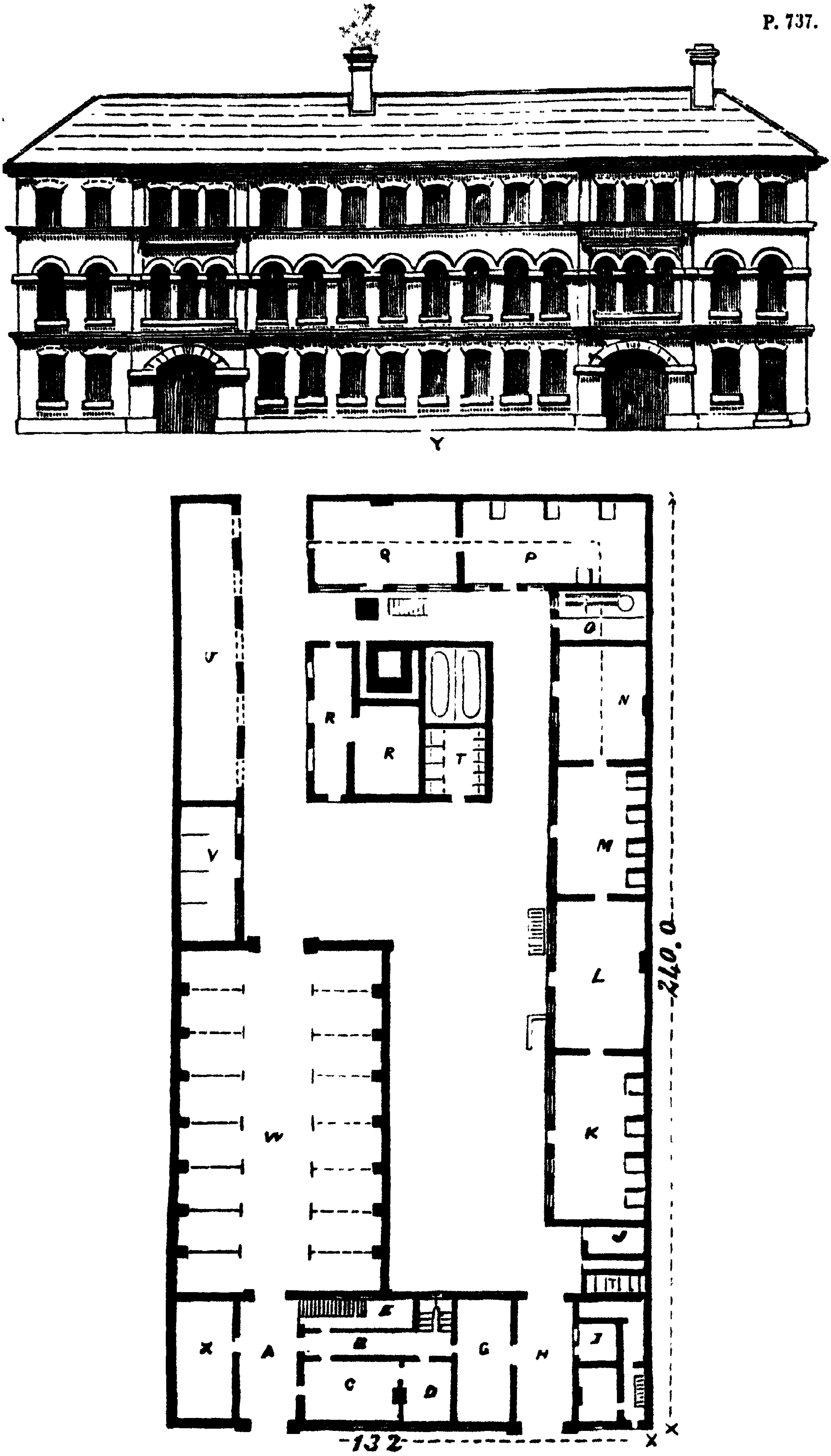
BRICKWORK.

Note.—The *foundations* of main building to street, iron warehouse, and manufactory, to be taken to a clear depth of thirty feet below the footpath, worked with concrete pillars, as shown. All internal cross walls being only 1 story in height, to be worked same as stable, except the walls on each side of each gateway, which are to be on piers and arches.

Materials and Work.—All the *bricks* used to be sound, well burnt, and square, of an uniform size, colour, and quality, from such yard as may be approved by the Architect. The *brickwork* to be executed in every respect in accordan[illegible]ith the plans, and of the several dimensions shown or figured [illegible], worked *English bond* throughout, of alternate courses of headers and stretchers; no bats or half bricks to be used where a whole one can be introduced; no joint to exceed a quarter of an inch in thickness; all walls above one brick in thickness to be *grouted* every other course with liquid mortar.

All work not plastered to have the joints neatly struck and cut.

The *front* to street and the engine chimney stack to be worked



Birmingh Factory

YEOVILL THOMASON, ARCHITECT.

with *seconds front bricks*, in white mortar neatly pointed. The brickwork in and about house and outbuildings immediately adjoining to be of good common bricks, and the whole of the warehouses, manufactory, sheds, boundary walls, &c., to be of good common Oldbury brown bricks. The piers between windows over gateway to be worked with hard bricks in cement.

The *plinth* in front elevation to shed and base of chimney stack to be worked with seconds blue bricks, with proper splayed plinth header course laid in cement; blue brick cornices to pedestal, and base of chimney stack; projections to chimneys, &c., with moulded bricks where shown; the *upper course* in all cases to be laid in cement.

Copings to all walls, gables, &c., not covered by a roof, to be of 2 courses blue bricks *laid in cement*. Sills to all windows, except street front, and steps to all doors in paved floors, where stone ones are not specified, to be of good blue bricks on edge in cement.

Steps to cellar in Keeper's house to be of common *brick*, with blue brick treads.

Provide proper *angle bricks* for angles of chimney shaft, *round corner bricks* to all angles where shown, stopped off at 8 feet high except windows. Cut all splays required, work chases for pipes &c., over-sailings to eaves, &c.

The *partition* between show-room and passage to be filled in with brick on edge.

The *flues* to be the sizes shown on plans, and pargetted smooth with a mixture of cow-dung and mortar. Each flue to have a terra-cotta chimney-cap, value 4*s*. each, and set in cement. The blocking to each chimney to be laid in cement. Inside of engine stack to be pargetted same as other flues.

Build *Smiths' hearths* in the several situations shown on plans, to be arched in 1 brick underneath, with ½-brick bonnet over the fireplaces, supported upon a 3½-inch × ¼-inch iron bar, and an inch × inch wrought-iron suspending bar to carry same, screwed to joists above.

The *arches* to ground and first-floor in front to street to be of cut front brick, in half-brick rings neatly pointed; those to second-floor windows in front to be rubbed and gauged with gauged soffits, with a 3-inch × ½-inch wrought-iron *camber bar* turned up at the ends, and to pass through the 3 windows to be provided for the triple windows in front elevation in second-floor.

All other external arches, including those to foundations, to be with picked bricks, in half-brick rings of the depths shown; those windows, shown with round corner reveals to have the arches worked with round corner bricks, the same to apply to those shown with splayed reveals, internal arches in plastered rooms of 2 half-brick rings. Provide 9-inch *relieving arches* over all internal openings, whether they have a lintel or not; half-brick arches to fireplaces of warehouses, offices, and Keeper's house, with 2-inch × ½-inch wrought-iron *camber bars* turned up at the ends; half-brick trimmer arches to hearths.

The space occupied by stoves between fitting and painting-shops, and the passage adjoining stoves, the basement to packing-room, and the cellar under sitting-room of house, and passage from bottom of steps to do., to be arched in half-brick with all necessary groins, jack arches, &c.; the whole well grouted and backed in, to be worked on proper wood centres, which are not to be struck until ordered by the Architect.

The *floors* of passage to offices, engine-house, mess-room, scullery, and yard to Keeper's house, Porter's room, water-closets (except one under staircase to show-room), urinals, and hearths in warehouses, to be laid with best *blue paving bricks* flat in mortar, and neatly pointed.

The *floors* of sitting-room, entrance lobby, and pantry in Keeper's house, to be laid with 9-inch best *red quarries* in mortar, and jointed in putty.

The *floors* of basements, store-room, packing-room, hurdle warehouse, passage by stoves, lobby to warehouse, staircase and passages to closets, to be paved with good *blue bricks* flat in mortar.

The *floor* of cutting and punching shop, stable and loose box, to be laid with good bricks on edge in mortar, and grouted in cement. Paved floors will not be required for iron warehouse, cutting-out shop, Smiths' shops, and casting-shops.

The offices and show-room to have 3 feet register *grates* with fire-stone backs; the sitting-room of Keeper's house a 3 feet oven grate, with back and crane, and an ash-pit and grate complete; for the mess-room, warehouse, and office first-floor, a 3-feet college grate. Bed-rooms in Keeper's house, sham register grates, and to all other fireplaces in warehouses and offices college grates to fit the openings.

Provide for setting the whole of the grates, using fire-brick back and sides to the college grates, well splayed.

Provide for building the *stoves and furnaces* in annealing and casting-shops, also the large stoves in painting-shops, in manner and form as shown on the drawings; the whole of the furnaces and the flues from the fireholds to the shafts, and for a distance of 10 feet upward in the shafts, to be worked with *Stourbridge fire-*

bricks laid in *Stourbridge clay*; also provide all requisite iron tie bars, &c.: properly build in, and fix all iron doors and frames hereinafter provided.

Build an arched *brick sink* in scullery of Keeper's house, and lay top with best paving-bricks in cement; also build a common brick setlas in cellar, and lay the same as provided for cellar floor.

The drains to be of glazed stoneware pipes of the several sizes, and laid in the direction as shown on plans; the joints to be put together in cement with all necessary bends and junction pipes that may be required, the drain from sink to be carried to the top of the sink.

The *drains* to be connected into the Corporation *main sewer*, that passes under the land by a 24-inch perpendicular shoot, 1 brick in thickness and worked in cement.

Provide and fix where shown 12-inch *cesspools*, built of half-brick in cement, and 2 feet 6 inches deep, and provided with 12-inch cast-iron trapped-drain grates and frames with blue brick flat course in cement round do., and extra strong ones for stable and loose box; also a 6-inch bell trapped grate and frame for scullery of Keeper's house.

The *mortar* to be of fresh burnt Dudley or blue lias lime and clean sharp sand in equal proportions of lime and sand well mixed and tempered together.

The *concrete* to be a mixture of one-fifth ground *blue lias lime*, one-fifth clean sharp sand, and three-fifths small stones not exceeding 1½ inch in diameter; the whole to be mixed up and thrown from a stage at least 10 feet in height.

STONEWORK.

The whole of the *stone* (except otherwise specified) to be of white Hollington, free of all flaws and defects, laid in its natural bed, cramped where requisite, properly protected, and left sound, clear, and perfect at the completion.

The arches and imposts to front entrances and window dressings and sills to ground-floor throughout to be worked in stone, sills to be weathered and throated.

The 2 entrance gates to Sheepcote Street and inner gate in manufactory entrance to have rubbed Hollington hook stones 2 feet 6 inches × 1 foot 3 inches of the depth of 3 courses, with strong wrought-iron hooks leaded in; the impost will, in both cases, serve for the upper hook stones. One set of hook and catch stories for entrance to yard and small door in iron warehouse. Hooks 1 foot 6 inches × 10 inches × 11 inches, catch stone 1 foot 2 inches × 7 inches × 10 inches with hooks and lock catch leaded in.

Rubbed Hollington angles to be worked to cornice of pedestal to engine chimney-stack moulded to match brickwork.

Tooled York *pads* 1 foot 6 inches wide by the length shown, and 4 inches thick, to receive roof principals to iron warehouse; also 4-inch York pads 1 foot 3 inches × 2 feet, for all floor beams throughout, both wood and iron, and also for iron girders under stoves.

The *steps* to entrances to offices and house, packing-room, lobby to warehouse stairs, store-room, Porter's room, mess-room, and packing-room to be 12 inches × 8 inches tooled York. The step to packing-room to be splayed to match plinth, and sunk to receive iron plates hereafter provided.

Dowels to be provided for all door frames fixed on a stone step.

Blue Bidford stone hearths 4 feet × 1 foot 6 inches, and 3 inches thick to offices, show-room, and sitting-room of house, with proper back hearths.

Provide the sum of 12*l.* for chimney-pieces, and set the same.

IRON FOUNDER.

The whole of the *iron* to be of the best kind, free of all flaws and defects, cast fair and true; all patterns to be approved by the Architect or Clerk of Works before casting, and all *cast girders to be tested* to the satisfaction of the Architect.

Cast-iron windows as per plans, and elevations and details to be provided; each window to have a proper casement to swing on pivots, and provided with proper jointed rack stay bar and casement fastening.

The *girders* to carry floors of stoves to be formed of 6-inch × $\frac{5}{8}$-inch wrought iron, each girder to consist of tie and blades worked double as shown, with cast-iron strutting blocks between them; the blades to be secured into a cast-iron head, and to be connected with tie by a $1\frac{1}{2}$-inch wrought-iron king pin, with heads, nuts, screws, and plates. The feet of blades to be secured to the ends of the ties with cast-iron shoes, and $1\frac{1}{4}$-inch wrought-iron bolts, with heads, nuts, screws, and plates to be provided to secure the whole together; the metal of the cast heads and shoes to be 1 inch thick. No. 3 one-inch wrought-iron tie rods to be provided for each floor of girders to connect the whole together.

Provide No. 3 wrought-iron *boiler-plate girders* for floors of upper warehouse, composed of top, bottom, and middle flanges of $\frac{7}{16}$-inch iron in double plates, with $\frac{7}{16}$-inch strutting pieces every 3 feet, as shown; the whole to be connected together with 3-inch × $\frac{7}{16}$-inch angle iron well riveted, rivets to be not more than 6 inches apart.

Roof to iron warehouse to have 2-inch tie-rods worked in 2 equal parts, $1\frac{1}{2}$-inch king and queen pins, 4 inches × $\frac{1}{2}$-inch **T** iron struts. A double disc plate $\frac{1}{2}$-inch thick to be provided for the junction of tie-rods, king pin and struts with $\frac{3}{4}$-inch bolts, as may be required. The junctions of queens and struts on to tie-rods to be made by the queens passing through the flanged portion of struts, and bolted through tie-rod on the underside, that portion of the tie-rod being strengthened to receive the above. The junction of king and queen rods and struts to the wood principal blades to be formed with cast-iron shoes, as shown by details; the metal for shoes to be $\frac{3}{4}$ inch thick, a sufficient quantity of $\frac{3}{4}$-inch bolts being provided to secure the shoes to the wood blades.

The sill and angles to door of packing-room to be of cast iron, 8 inches girth, $\frac{3}{4}$ inch thick, let into step and firmly plugged and screwed. The angles to be 5 feet high and 8 inches girth, firmly screwed to wood bricks.

The *doors to stoves* to be of $\frac{3}{4}$-inch wrought-iron plates, each door in 1 plate, bolted into a frame of $\frac{3}{8}$-inch × 4-inch angle iron; the whole hung with wrought-iron hinges to 6-inch × $\frac{3}{8}$-inch wrought-iron jambs worked as angle iron; these doors to have a swivel bar fastening, with eyes, pins, and plates, as may be required.

Provide for *fire holes of stoves* 4 strong cast-iron doors, grates and frames complete.

Provide 3 dozen cast-iron ventilating bricks with slides, and build in same where required.

Provide *cast-iron cornice* to engine stack, as per elevation: iron to be $\frac{1}{2}$ inch thick, to be cast in 2 parts, and screw bolted together with six $\frac{1}{2}$-inch wrought-iron bolts, with heads and nuts.

Window Guard Bars.—Ground-floor windows in front elevation not provided with wood shutters to have $\frac{3}{4}$-inch round wrought-iron bars, 6 inches from centre to centre firmly fixed into $2\frac{1}{2}$-inch × $\frac{1}{2}$-inch wrought-iron rails, 4 rails to a window, and built on the brickwork.

PLASTERER.

The *ceilings* and *walls* of passage to offices, staircase to show-room, &c., water-closet under ditto, offices, show-room, mess-room, *Joists* to be of the different scantlings shown or figured on the respective floors in which they are situate. Trimmers and joists trimmed into to be ½-inch thicker. Bond under joists 4 inches × 3 inches; lintels (1 foot 6 inches longer than openings) and wood bricks (1 foot 6 inches long) 4 inches × 3 inches. Each floor of joists to be cross-bridged with 3 inches × 2 inches; 2 rows to all floors or bays of floors that have more than 14 feet bearing between the joists.

Partition between show-room and passage to have 8 inches × 4 inches; sill 7 inches × 4 inches; head 7 inches × 4 inches; queens 7 inches × 6 inches × 4 inches; blades filled in with 4 inch × 3 inch studs, and to have ¾-inch heel pins, as before, to feet of blades, and four ¾-inch pins with heads, nuts, &c., to secure head and sill to queens.

Floors to show-room, offices, and bed-rooms, and landing in Keeper's house, landings, &c., to warehouses and water-closet under stairs, to be laid with inch wrought deal battens, laid folding, well bradded down, and cleaned off. All other floors to warehouses passages, manufactory to be 1¼-inch rough deal battens; and to lofts, &c., over stable 1-inch rough deal battens, well bradded down, scribed to walls, and left level at the completion; *hearths* to be mitre-bordered; floors in manufactory to be ploughed and tongued with hoop *iron or wood tongues.*

Offices, ground-floor, landings, and show-room to have 1-inch moulded plinth and grounds, 9 inches deep; water-closet under stairs, office, first-floor, and the whole of the rooms, closets, landings, &c., to house, to have ¾-inch torus plinth 7 inches deep.

Entrance gates to manufactory and iron warehouse to be 3 inch bolection moulded and bead flush, hung folding, with rebated and beaded meeting rail, hung with 3-inch × ½-inch wrought-iron bands 6 feet long to each rail, and bolted together with ½-inch bolts 9 inches apart, with heads and nuts to hook-stones, before provided; each door to have 2 long bolts to shoot into key-stone of arch, and two 12-inch ditto to shoot into a 6-inch × 6-inch oak stop post, shod with iron, and 4 feet long, and each to have a 3-inch × ½-inch wrought-iron pivot bar, with staples, &c., complete. Proper *jib gates* to be formed, hung with butt-hinges and provided with locks.

Entrance door from gateway to manufactory to be 2¼-inch hung, folding edges of panels to be beaded, and panels to be filled in with ½-inch cast-iron open gratings, to an approved pattern; hung with bands, as shown, secured as before to hook-stones before provided, and to have 2 strong bolts to shoot into crown of arch, and a

6-inch × 6-inch oak stop-post, and provided with a good 12-inch iron-bound copper-warded *stock lock.*

Door to staircase, to warehouse entrance, to offices, Porter's room, yard to house, and mess-room, to be 2-inch bead flush and square, hung with 4-inch butt hinges and screws to 7-inch × 2½-inch rebated and rounded jambs, with arch boards (except mess-room and entrance to staircase and offices, which are to have segmental heads, double beaded imposts, rail, and 1¾-inch fanlight), jambs to be dowelled into stone steps; these doors to have 9-inch best rim *locks,* 1 to have two 10-inch barrel *bolts.*

Doors to offices. 1 door to show-room and warehouse, first floor to be 2-inch deal, double moulded; internal doors to packing-room and store-room; door at end of passage to bedstead warehouse, door to show-room, and doors to warehouses, second-floor, to be 1¾-inch moulded and square, the whole hung with 4-inch butt-hinges and screws to 1¼-inch single rebated jambs; doors to offices and show-room to have 8-inch best *mortice* locks, with brass furniture; the remainder to have best 9-inch *rim locks.*

Front door to packing-room to be 2¼-inch bolection moulded and bead flush, hung folding, with three 4-inch wrought butts to each fold, to 5-inch × 4-inch rebated and beaded jambs, dowelled into stone step, and to be provided with four 16-inch strong iron barrel bolts and screws; the panels to be covered with sheet iron on the inside.

Front door to Keeper's house to be 2-inch bolection moulded and square, hung to 5-inch × 3-inch rebated and beaded jambs, with 4-inch wrought butt-hinges and screws, and to have best 12-inch drawback locks, and two 10-inch barrel bolts, and to have moulded impost rail and 2-inch fanlight.

The whole of the internal doors to house to be 1½-inch, moulded and square, 6 feet 8 inches × 2 feet 10 inches, hung with 3½-inch wrought butt hinges and screws to 1¼-inch single rebated jambs, and provided with 8-inch rim-locks, except closets and pantry, which are to have 5½-inch spring latches, with bolts.

Doors to manufactory, both on ground and first-floor, external door to store-room, doors to stable loose-box, annealing and casting-shops, and small entrance to iron warehouse, to be 1½-inch batten, ledged, tongued, and beaded, hung with 20-inch hooks and bands, fixed with nuts and screws to 7-inch × 2½-inch rebated and rounded jambs, with segmental heads, and provided with best 12-inch copper warded *stock locks* and Norfolk latches (except stable and loose box, which are to have stable latches), impost rails for those of the above doors shown on elevations to have them. Cast-iron fanlights to

Staircase to warehouse to have 2-inch rough elm treads, the edges shot, inch deal risers, the whole housed into 9-inch × 2-inch beaded strings, with such carriages to support same as may be required. This staircase to be enclosed from store-room from top of string only (and warehouses as dotted on back elevation) with inch wrought and rebated, and beaded match boarding; 3-inch × 2-inch wrought studs 3 feet apart, and 3-inch × 3-inch rebated angle studs to form door jambs. Inch ledged *doors* to match boarding, hung with 20-inch Scotch T hinges, and provided with Norfolk latches and 10-inch best *rim locks.* 3-inch × 2-inch deal rounded handrail, and 3½-inch × 3½-inch newels to protect well of this staircase on second floor; ¾-inch beaded casing and nosing round well.

Step-ladders in manufactory to have 9-inch × 2½-inch rough elm treads, the edges shot, properly housed into 9-inch × 2½-inch wrought deal sides with 2½-inch wrought-iron screw-pins with heads, nuts, washers and plates to each. Landings to have 1½-inch rough *elm floors,* with 1¼-inch joints between boards on 7-inch × 2½-inch bearers framed into joists, landing and ladders to have 4-inch × 2½-inch deal wrought and rounded rails, and 3½-inch × 3½-inch wrought square newels complete.

Staircase to house to have 1-inch treads, inch risers housed into 1¼-inch beaded wall and front strings, on proper carriages and bearers, with such inch bar balusters, 3 inches × 2 inches rounded rails, and 3-inch × 3-inch newels as may be required. 1¼-inch square spandril at bottom, and cellar-door to match, hung with 3-inch butts and screws, and provided with 5-inch rim latch complete.

Step ladders to loft to have 1½-inch rough elm treads, sunk into 7 inch × 2-inch beaded sides, wrought with 2 screw pins as provided for other step ladders. Well to be protected by 3-inch × 2-inch wrought deal rail, and 3-inch × 3-inch newels; also an inch ledged *trap door,* hung with 12-inch Scotch T hinges, and provided with sunk flush ring.

A light moveable step ladder from packing-room to basement to be provided.

All other steps, not otherwise described, to have 1¼-inch rough *elm treads,* inch deal risers, and 1½-inch plain beaded strings, and 4-inch × 3-inch bearers where required.

Water-closets under staircase and to house to have 1½-inch seat, with rounded edge and hole cut in ditto; 1-inch riser, the whole on 3-inch × 2-inch carriages and bearers; seats to have inch framed flaps and beaded frames, hung with 2½-inch brass butt hinges and screws, 1¼-inch moulded and square backs and elbows, 1 foot 3 inches deep, with ⅜-inch beaded capping to ditto complete.

¾-inch beaded casings, fixed with screws and collars for all exposed pipes.

Men's closet to have inch seats, as before, with inch risers on 3-inch × 2-inch framed bearers; seats to be skirted round with inch torus plinth 9 inches deep.

Division in loft over stable to have 3-inch × 2-inch rough deal studs, with 3-inch × 3-inch angle studs and door-jambs, covered with ¾-inch wrought and beaded match boarding, with inch batten ledged door in ditto to match, hung with 16-inch Scotch T hinges, and provided with Norfolk latch and 10-inch rim lock.

Stall divisions in stable to have 7-inch × 7-inch wrought oak angle posts, 4 feet in the ground, with rough butts 6 inches × 4 inches, oak top and bottom rails 7 inches × 2 inches, elm double middle rails, the whole filled in with 1½-inch rough *elm boarding*. Space between each stall and also the end of loose box to be equally divided between rack and manger, with a 4-inch × 3-inch oak rounded top and bottom rail, firmly secured into divisions, with 1½-inch round oak rack staves to rack, made to revolve, and 1½-inch *elm sides*, and bottom and bearers to ditto for manger. All edges to be rounded in the above work.

Provide all woodwork that may be required for fixing wash-hand-basin in closet under stairs.

Cupboard in sitting-room, 8 feet high, to have 1¼-inch moulded and square front and frame, with beaded hanging-stiles, hung folding in 2 heights, with 3-inch brass butt hinges and screws, finished round with single mould to match doors, and fitted with 5 tiers of inch shelves, with 3-inch × ¾-inch beaded cuprails, and brass hooks under 2 tiers. Pantry fitted with 3 tiers of inch shelves, 14, 12, and 9 inches wide on proper bearers.

Front eaves to offices to have 1¼-inch fascia fixed to feet of rafters, grooved for cement with bed mould under spout, and 3-inch × 2-inch bearers for soffit.

PLUMBER.

Gutters to roofs to be laid with *milled lead*, 5lbs. to the superficial foot, and to be 8 inches wide in the narrowest part, with drips as shown on roof plans, turned up the slates 8 inches, and up the wall 6 inches, and flashed with 4-lb. lead flashing 6 inches wide: 8 inches square 5-lb. lead cesspools into down pipes 8 inches deep, with 4 inches 5-lb. lead socket pipes 1 foot 6 inches long, soldered in, except those to roof of iron warehouse, which are to be 5 inches in diameter. Chimney gutters to be the same as before, only to be 4 inches wide in the flat part; hips to be of 5-lb. lead 20 inches wide; valleys 5-lb. lead 16 inches wide. Skylight gutters to be of 5-lb. lead, turned over top rail of light, and 8 inches up the slates; sides of skylights to be flashed with 5-lb. lead, turned over frame and under slates of a sufficient width, with 5-lb. apron-pieces, firmly secured, 8 inches wide; 4-lb. apron-pieces to skylight of iron warehouse. All gables, sides of chimneys to be under and over flashed with 4-lb. lead. 4-lb. lead over flashings to ridge of shed roofs, 6 inches wide, secured with wall hooks.

Front and back eaves of main building to have *galvanized iron eaves trough*, cyma-recta pattern the size shown, fixed with long screws through fascia to feet of rafters, and to have stopped ends and 3½-inch socket pipes, 1 foot 6 inches long, soldered in.

The whole of the back eaves to manufactory, iron warehouse, &c., to have half round *galvanized iron eaves* trough, 5 inches diameter, fixed with strong plain galvanized iron brackets to feet of rafters, and to have stopped ends and socket pipes as before.

The *down pipes* to be of *galvanized iron* of the different sizes to correspond with the before specified socket pipes, to be properly connected with the socket pipes; 6 feet length of each stack to be of cast-iron; the whole fixed with strong galvanized iron staples.

Water-closets to be fitted with *Lambert's patent*, with blue earthenware basin to office, and glazed stoneware to the others, with proper cast-iron air vessels, best brass taps, levers, valves, &c. complete, and supplied with ¾-inch strong lead supply pipes direct from the waterworks' main; ¾-inch lead supply to urinals from main, with best brass tap and loose key. Provide and fix in bottom of each set of urinals a brass plug, to let off the water into drain, with loose keys for the plugs to be inaccessible to the workmen.

Fit up in corner of water-closet under stairs a blue earthenware *washhand-basin*, with ¾-inch lead overflow trapped into pipes; ½-inch supply from main, and 1¼-inch waste, with ¾-inch brass plug chain and waster complete.

Provide and fix near centre of manufactory a ¾-inch pipe, with best brass bib tap for supplying water.

GLAZIER.

The *skylight* to iron warehouse to be glazed with 21-oz. sheet glass, the widths shown, in 3 lengths to each skylight; all other skylights to be glazed in a similar manner, but in 2 lengths of glass to each. Windows to front street to be glazed with best crown, except the 2 lower squares in each window, which are to be of rough rolled plate $\frac{1}{4}$-inch thick. Sash between office and passage to be glazed with *fluted glass.* Water-closet with *ground glass,* and the remainder of the warehouse and manufactory, not before specified, to be glazed with seconds crown; the whole well puttied and free from all defects.

PAINTER.

The whole of the wood and ironwork, including eaves and down spouts, to have 3 coats of good oil colour paint, being first well knotted and stopped, left clean and perfect at the completion.

Provide the sum of 150*l.* for sundry extra work, which will be deducted, if no such work occur.

The several works hereinbefore described are to be executed under the direction and to the satisfaction of the Architect, with the best material and workmanship; and in case of the Architect disapproving of any of the materials, that may be furnished by the Contractor for the said works, or their mode of workmanship, the Contractor shall forthwith remove such material and substitute such as shall be satisfactory, and amend the mode of workmanship conformably with the Architect's directions.

The whole of the works to be finished fit for occupation by the day of next under a penalty of pounds per week for every week any part of such works shall remain unfinished after that date; and should there be any incompetency shown in the management thereof, the Architect shall be at liberty (after giving three days' notice in writing to the Contractor) to provide for the immediate despatch of the works then remaining unfinished, and all costs and expenses that may be incurred thereby shall be deducted from the amount due to the Contractor. Should the works be suspended on account of the weather (by order of the Architect) the time occupied by such suspension shall be added to the time allowed for finishing. Anything contained either in the plans or specification is to be considered as contained in both, and to be as obligatory upon the Contractor as though expressed in both.

The Contractor is to be answerable and responsible for all accidents, that may occur to these works during their erection, and to take every precaution to guard against the same, and to indemnify and save harmless the Proprietors from all acts, defaults, or neglects of the Contractor or his servants, and against any action suits, damages, and expenses, that may be occasioned thereby.

No alteration to be made from the plans or specification without an order in writing from the Architect, and if any alterations are made causing either an addition to or deduction from the amount of contract, such alterations shall not be considered to invalidate the same; but the amount of such alterations, whether additions to or deductions from the amount of work contained either in the plans or specification, shall be ascertained by fair admeasurement and added to or deducted from the amount of contract as the case may require.

The Contractor is not to assign or make over the contract to any other person, nor to underlet the works to any taskmaster, but to perform the same with materials purchased and workmen employed by him.

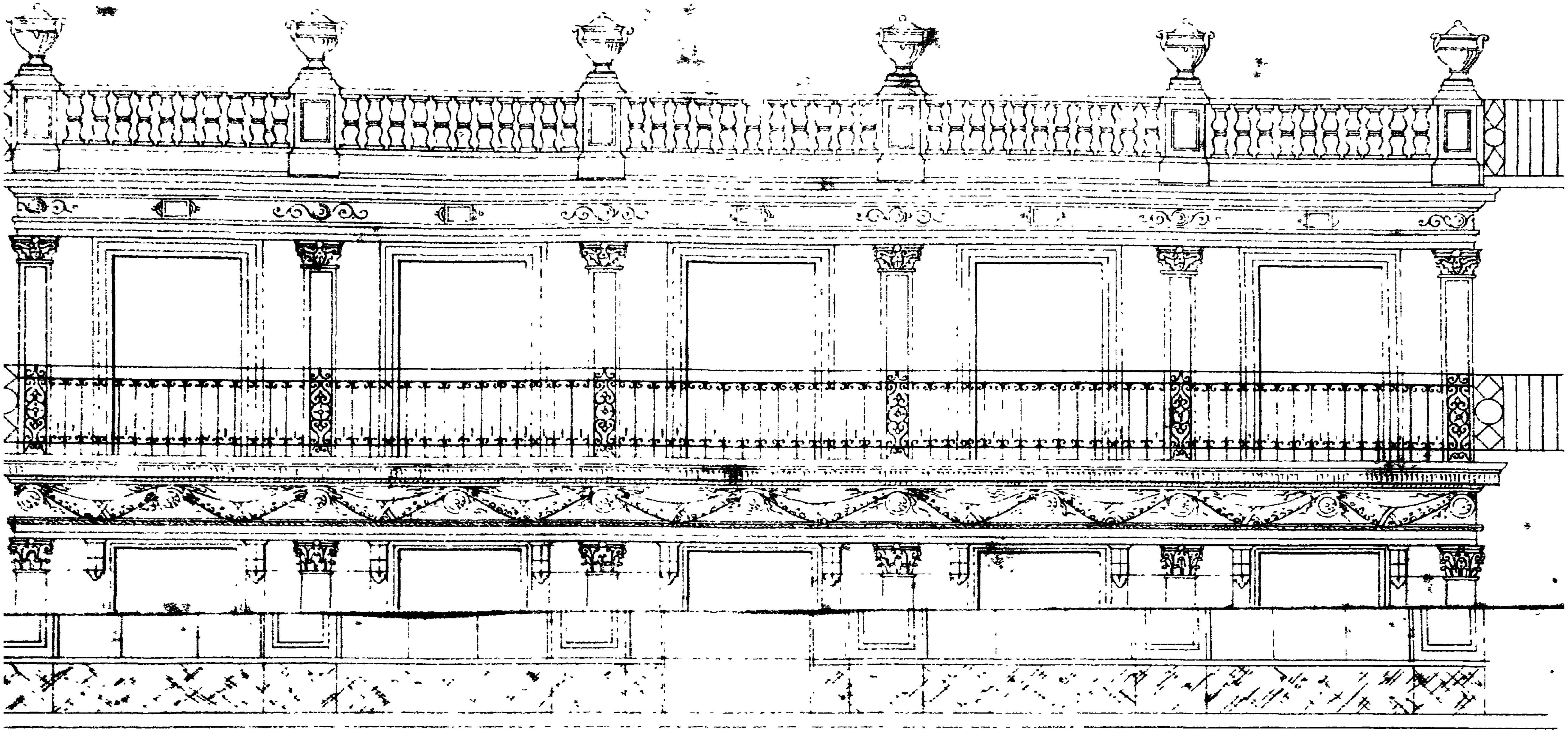
Payment will be made as the work proceeds to the amount of two-thirds of the work done on receiving a certificate from the Architect to that effect, and the balance in three months after the whole is certified to have been completed.

An efficient Foreman to be provided to superintend the whole of the works.

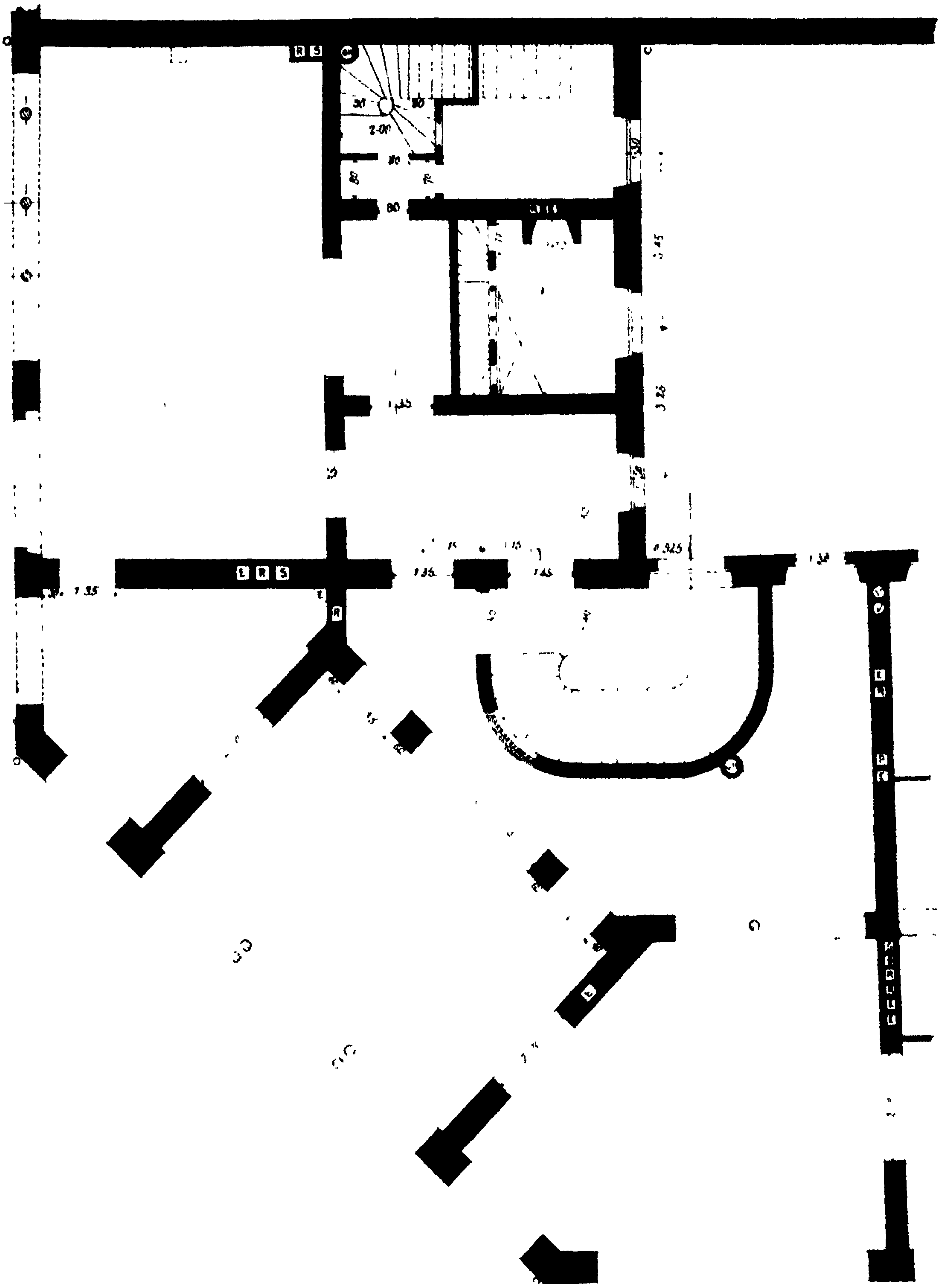
One copy of the whole of the plans and specification will be furnished to the Contractor, and to be kept in a box to be provided by the Contractor for that purpose, and not to be taken away from the building upon any pretence whatever.

Provide all necessary hoarding that may be required to enclose the land, with all temporary doors, locks, and keys, the same to remain until ordered to be removed.

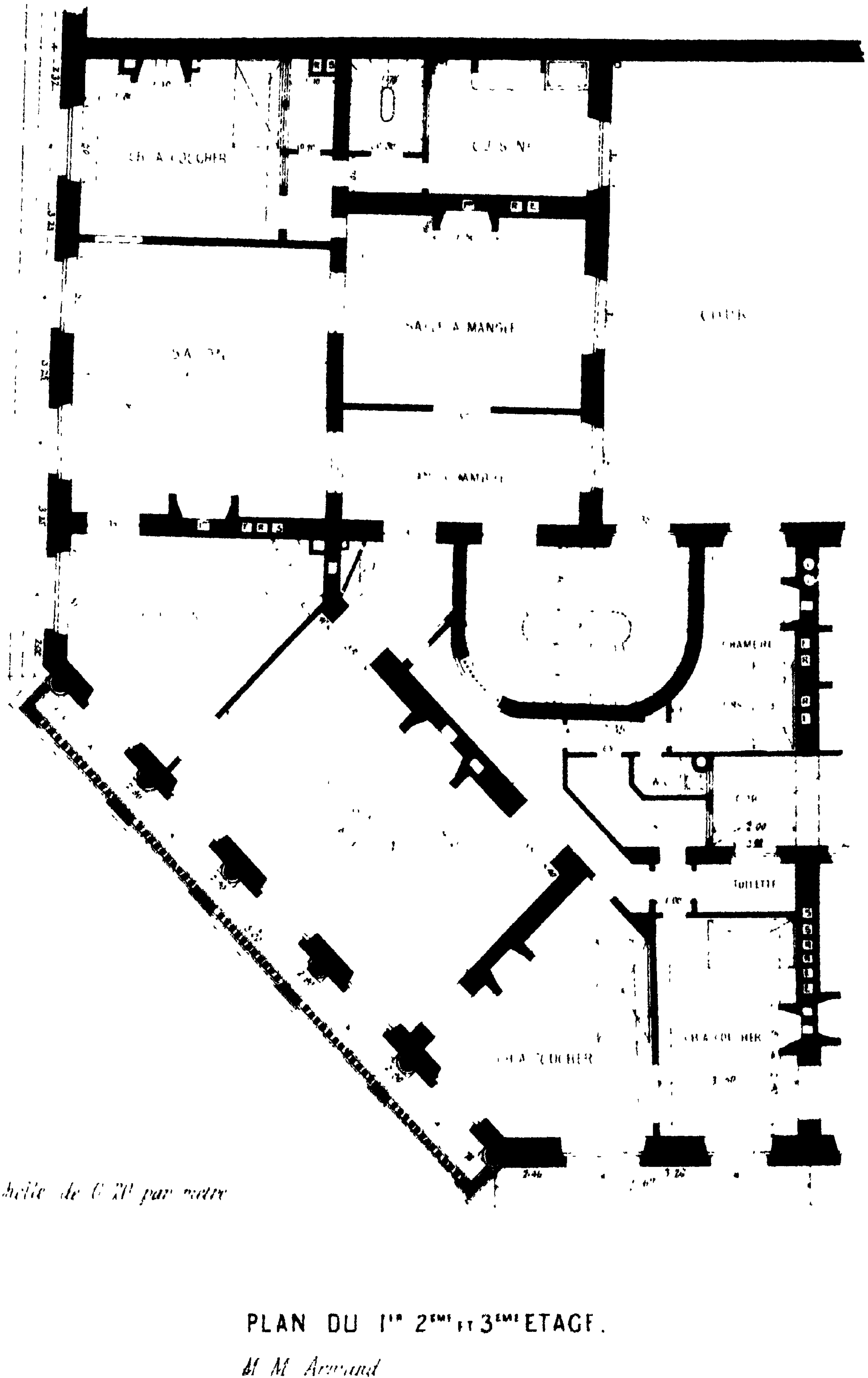
ELEVATION SUR LE PAN COUPE



Echelle de 0 20 par metre *M. M. Armand* *Hittorff* *Architects* HOUSES RUE DE RIVOLI PARIS.



PLAN DE L'ENTRESOL



Echelle de 0.20 par metre

PLAN DU 1er 2eme ET 3eme ETAGE.

M. M. Armand
Hittorff
Pellechet } *Architectes*
Rohault de Fleury

Construction des MAISONS RUE DE RIVOLI, RUE ST. HONORÉ, ET RUES ADJACENTES. Messieurs ARMAND, HITTORFF, PELLECHET, *et* ROHAULT DE FLEURY, *Architectes.*

DEVIS DESCRIPTIF.

LES constructions seront élevées sur les terrains acquis par la Société Immobilière, lesquels sont limités par les Rues de Rivoli et St. Honoré, et la Place du Palais Royal, et les Rues du Coq, de l'Echelle et de Rohan, et seront composées de bâtiments se développant sur les rues et place susnommées, et laissant libre vers le milieu un espace réservé pour les cours.

N.B.—Le présent devis descriptif et cahier des charges s'applique plus spécialement aux constructions à arcades, avec décoration régulières, et hauteurs d'étages déterminées par la loi. Des annotations spéciales seront appliquées sur tous les plans de chaque maison, et compléteront ce que le cahier des charges générales laisse nécessairement de vague.

Les bâtiments seront élevés sur étage souterrain, d'un rez de chaussée, d'un entresol, de trois étages carrés, d'un quatrième étage lambrissé sur les places et les rues, et carré sur la cour, enfin, d'un cinquième, dans la partie supérieure des combles. L'étage souterrain régnera également sous les cours. Les fosses seront placées en contre bas de cet étage.

Les hauteurs d'étage sur les rues, autres que celles à arcades, seront déterminées à chaque plan.

MAÇONNERIE.

ÉTAGE SOUTERRAIN.

Béton.—Les rigoles pratiquées lors de la fouille seront remplies de béton; elles s'étendront entre tous les points d'appui isolés, et sont destinées à les relier, ainsi que toutes les baies; le béton sera composé de trois parties de cailloux, et de deux parties de mortier.

Le mortier sera composé d'un mètre cube de sable de rivière, et de trente-trois centimètres cubes de chaux hydraulique éteinte.

Le béton sera déposé et pilonné par couches de 15 centimètres d'épaisseur.

Murs.—Entre les points d'appui, les murs seront construits *en* *moëllons* de roche, hourdés en mortier hydraulique. Ce mortier sera composé comme celui du béton.

Jambes étrières, Chaînes, Piles, &c.—Toutes les parties teintées plus foncées sur le plan, telles que jambes étrières, chaînes, piles isolées, têtes de murs, et pieds droits de baies, seront montées en libages de roche dure, dans les formes et dimensions qui seront indiquées par les Architectes, portant des harpes de dimensions nécessaires (au moins quinze centimètres de chaque côté). Il y aura aussi *des chaînes en libage* à tous les points d'appui principaux, aux angles des murs, sous les piles du rez de chaussée, et sous les colonnes de fonte. La pierre de libage ne sera employée que dans l'étage souterrain. Les piles isolées seront en roche dure de Bagneux.

Travail.—Toutes les pierres seront convenablement appareillées, les joints horizontaux seront délardés, les joints verticaux seront démaigris à 4 centimètres des parements ; elles seront posées sans cales, et fichées sur mortier semblable à celui ci-dessus décrit ; jointoyées en même mortier ; layées et ragréées dans les pièces principales de l'étage souterrain, et seulement rustiquées avec ciselures dans les caves. Aucune pierre ne sera coulée en plâtre.

Planchers des Voûtes.—L'étage souterrain sera surmonté soit de planchers en fer, soit de voûtes, suivant les distinctions qui seront établies sur les plans.

Les *voûtes* seront, soit en moëllon de banc franc, hourdé en mortier hydraulique, soit en briques dures de Bourgogne, de onze centimètres d'épaisseur, hourdées en plâtre ou mortier, suivant les distinctions qui seront établies sur les plans. Les *voûtes* sous les cours seront faites en meûliéres de choix posées en mortier hydraulique, jointoyées et rocaillées à l'interieur. Dans tous les cas, les sommiers seront de même construction que les murs, et ceux-ci seront montés avant la construction des voûtes. Les voûtes comprendront des pénétrations au droit des portes et soupiraux. Les pieds droits des portes étant en pierre, les pénétrations des dites portes seront également en pierre. Les pénétrations des soupiraux seront faites en moëllons durs de roche, malgré la difficulté de la taille, et de qualité non susceptible de geler. *Reins des Voûtes.*—Des massifs en béton hydraulique comme ci dessus, rempliront les reins jusqu'à la partie la plus élevée de l'extra-dos.

Arcs de Portes et Soupiraux.—Tous les arcs de portes et de soupiraux et leurs pénétrations seront construits ainsi qu'il suit. Dans les parties voûtées en moëllons, en moëllons hourdés en mortier hydraulique. Dans les parties voûtées en briques, en briques dures hourdées en même mortier. Dans les parties surmontées d'un plancher, en briques dures hourdées en même mortier. Dans les murs, dont les piédroits seront en pierre dure de roche, les arcs seront également en pierre dure de roche. Les *glacis de soupiraux* seront formés par des dalles en roche dure, de 8 centimètres d'épaisseur. Les *châssis de soupiraux* seront en roche dure.

Maçonnerie des Fermes.—Les *fermes* destinées à porter, soit des murs du rez de chaussée, soit des parties de planchers, et qui seront décrites à la Serrurerie, seront hourdées en briques creuses, de onze centimètres, carrées, et ciment Romain.

Les parties de cet étage, autres que celles voûtées, seront surmontées de planchers en fer qui seront décrits à la Serrurerie. Ces *planchers* seront cintrés *en poteries creuses*, hourdées en plâtre, et plafonnés, ou en briques creuses, de onze centimètres, carrées, et également plafonnés.

Les *cloisons de distribution* seront en briques dures de huit centimètres d'épaisseur, façon Bourgogne, hourdées et jointoyées en mortier, comme ci dessus. Les parties de cloisons au droit des cabinets d'aisances seront hourdées en ciment Romain.

Tous les *scellements* des fermes en fer, des solives des huisseries, des poteaux de distribution, gonds, pattes, &c., seront faits en tuileaux et ciment Romain.

Smillages, enduits et jointoiements.—Dans les pièces indiquées sur les plans, les enduits des murs seront en *ciment Romain.* Les jointoiements des parties en pierre, et des voûtes en briques, seront également en ciment Romain. Ce ciment Romain sera de la première qualité et d'une provenance certaine, et employé par des ouvriers spéciaux. Cette observation s'applique à toute l'étendue de la construction. Les murs et voûtes des caves indiquées sur les plans, seront smillés et jointoyés en *mortier hydraulique* aussi bien que les cloisons et voûtes en briques. Les murs et plafonds des piéces plafonnées, soit en pots, soit en briques creusés, seront ravalés *en plâtre fin.*

Parements en Pierre.—Dans les piéces principales, indiquées sur les plans, les parements en pierre seront layés et ragréés ; dans les caves, ils seront layés seulement, ou rustiqués avec ciselures, suivant leur destination. Dans les piéces plafonnées, ils seront layés et ragréés.

Sols.—La nature des sols variera en raison de la destination des diverses parties de cet étage. Le sol des *caves* indiquées sur les plans sera battu et salpêtré à 0$^{m.}$ 08 dépaisseur. Le sol des *pièces* indiquées sur les plans sera dressé pour recevoir un parquet Gourguechon (ces parquets sont scellés à bain de bitume), qui fera partie de la menuiserie. Le sol des *caves indiquées* sur les plans sera dressé pour recevoir un béton de 8c. et un bitume de 15 millimètres. Le sol des *pièces* indiquées sur les plans sera dressé pour recevoir un béton de quinze centimètres, et un dallage en roche dure de huit centimètres. Le sol indiqué sur les plans sera pavé, et décrit à l'article Pavage ; le redressement du sol fait partie des obligations du Maçon. Le sol des *cabinets* d'aisances sera dressé pour recevoir un béton qui sera recouvert d'une couche d'asphalte.

Les noyaux *d'escaliers de caves* seront en pierre de roche dite de libage. Les marches seront en pierre de roche très dure, avec chanfreins pour élargir les girons.

Les *fosses d'aisance* seront construites en meulière hourdée en mortier hydraulique, avec un soin tel, qu'elles soient aussi bien étanches pour les eaux venant du dehors, que pour celles qu'elles devront contenir. A cet effet, au lieu d'un simple massif exigé par l'ordonnance, le fond sera composé d'une voûte renversée en meulière. Sous les points d'appui principaux, les chaînes et dés en pierre devront être recouverts d'un rocaillage en meulière, pour recevoir l'enduit. Les enduits intérieurs seront en ciment Romain coupé d'un quart de sable de rivière, et de deux centimètres d'épaisseur, sur rocaillage plein. Ces enduits devront être rudes au toucher, quoique sans aspérités aucunes. Les orifices de chûte auront une lunette ou pénétration, dont la hauteur sera celle de la clé de voûte ; elles seront en pente douce. Ventouses exigées par la police.

Les *tuyaux de chûte* en fonte, dont la fourniture fera partie de la Serrurerie, seront posés par l'entrepreneur de maçonnerie. Ceux desservant les divers étages, s'arrêteront à $0^{m.}$ 50, au dessus du dernier siège, et seront continués en poterie, jusqu'au dessus des combles. Les *tuyaux de ventouses* seront également en fonte, jusqu'à $1^{m.}$ 50 au dessus du sol du rez de chaussée, et continueront en poteries dites Anglaises, de 25 centimètres de diamètre intérieur, et s'éléveront également au dessus du comble. Chacune *des fosses*, au point où les plans l'indiqueront, sera mise en communication avec une ventouse principale qui sera établie indépendamment des ventouses exigées par la police, et placée près d'un foyer de cheminée qui sera désigné par les Architectes. A cet effet, il sera établi, soit dans les reins des voûtes des fosses, soit sur le sol des caves, destuyaux carrés ou cylindriques, mettant en communication chacune des fosses avec la dite ventouse principale, qui passera sous le foyer, à l'effet d'être chauffée, et de déterminer un appel puissant, et s'élévera jusqu'au dessus du comble. La surface de la section sera au moins égale à celle de toutes les ventouses réunies. Ces tuyaux pourront être suspendus aux voûtes des étages souterrains, ou placés dans les reins des voûtes, conformément à l'étude qui en sera faite par les Architectes.

Les *chassis d'extraction* seront composés d'un cadre de 30 centimètres d'épaisseur, et de vingt centimètres de largeur, refouillé en quatre morçeaux; les pierres de fermeture seront en deux morçeaux de quinze centimètres d'épaisseur, à feuillures; la roche très dure; on se conformera d'ailleurs à toutes les prescriptions de la police.

Les *cabinets d'aisance* seront, pour les divers communs, en fonte Parrizot, et pour les particuliers, avec garde robe à valve. Dans les cabinets d'aisances communs, scellement du siège en brique et ciment Romain. Scellement idem de plaques d'isolement en fonte, enduit des murs en ciment Romain dans la hauteur d'un mètre. La fourniture des sièges, cuvettes et plaques en fonte, sera indiquée en son lieu. Outre la ventilation des fosses, les cabinets pourront être ventilés conformément aux détails des Architectes.

On fournira *des seuils* en pierre de roche aux endroits indiqués sur les plans.

Il sera ménagé des *tuyaux de cheminée* pour les foyers qui pourront être placés à cet étage. Le nombre et l'emplacement en sont indiqués sur les plans dessinés à l'échelle de deux centimètres pour mettre de manière que chaque pièce résultant des distributions ultérieures en ait une. L'ouverture de chaque tuyau sera cintrée en briques. Les tuyaux de fumée des cheminées de cuisine et des calorifères, seront d'une section de $0^{m}\cdot60$ à $0^{m}\cdot70$, sur $0^{m}\cdot26$ à $0^{m}\cdot30$.

Des petits *puisards*, dont la position sera fixée par les Architectes, seront construits suivant le système indiqué pour les fosses, en *meulière hourdée en mortier hydraulique*; enduits intérieurs en ciment Romain; et recouverts de dalles de roche taillées en cuvette, et formant syphon.

REZ DE CHAUSSÉE.

Bitume.—Au-dessus des voûtes des caves placées sous les cours, il sera établi une chape en mortier hydraulique, avec caniveaux au-dessus des murs, dont la pente conduira les eaux dans les points désignés par les Architectes, et d'où elles seront écoulées par des conduits en poterie ou en fonte, suivant la convenance des localités où passent les conduits. La chape en mortier hydraulique est destinée à recevoir du bitume.

Brai Gras.—Au-dessus des sols extérieurs et intérieurs, et à la mais l'entrepreneur de maçonnerie devra préparer le sol pour les recevoir.

Assises continues.—Dans les murs sur les cours, destinés à servir de séparation entre deux maisons contiguës, on placera une assise de retraite en roche dure de 50 centimètres de hauteur.

Dalles de Revêtement.—Si les murs mitoyens sont en commun avec des tiers, par exemple, sur la Rue de Coq et sur la Rue de l'Echelle, le bas de ces murs sur les cours, sera revêtu d'un cours de dalles en roche, de $0^{m.}\ 05^{c.}$ d'épaisseur, et formant une retraite régnant avec celle des cours. On évitera d'entailler le mur pour la pose de ces dalles.

Il sera pratiqué aux endroits indiqués par les Architectes, deux *ouvertures pour jeter le bois* et le charbon, composées chacune d'un châssis en pierre de roche, et d'une trappe et bois, dont le détail sera donné par les Architectes.

Les deux premières *marches* du grand escalier seront en liais dur, et porteront volutes en moulures. Les autres marches auront le dessus en dalles de même liais, de $0^{m.}\ 06^{c.}$ d'épaisseur, profilées et contre-profilées d'onglet. Dans les escaliers secondaires, les deux premières marches seulement seront en même liais avec volutes et moulures. Dans les escaliers de service, la première marche sera en pierre de roche.

Les *appuis* des croisées du rez de chaussée seront en pierre de roche avec pentes, regingots, et coupe-larme.

Les *cloisons* principales seront en briques dure de cinq centimètres, hourdées en plâtre, et portées à huit centimètres par les deux enduits. Les cloisons à l'intérieur des boutiques seront ajournées et ne font pas partie du présent devis. Les cloisons des cabinets d'aisances seront hourdées en ciment Romain, jusqu'à la hauteur de $1^{m.}\ 00$ au-dessus du sol intérieur.

La quantité et la position des *tuyaux de cheminées* seront déterminées par les Architectes, de manière qu'il y ait un tuyau réservé pour chacune des pièces résultant, soit de la distribution actuelle, soit de celle à faire ultérieurement. Les tuyaux de cheminée adossés seront en terre cuite de $0^{m.}\ 25^{c.}$ de dimensions intérieures et de forte épaisseur, à feuillures et embrèvements, des fabriques Gourlier, Fontrouge, ou autres équivalentes ; ils seront soumis à l'approbation des Architectes. Les tuyaux en pleins murs seront construits en briques Gourlier de 26 centimètres de diamètre intérieur, placés suivant l'indication des plans et du détail qui en sera donné. Ces tuyaux seront bien liaisonnés avec la pierre ou la brique formant le corps du mur, et jointoyés en plâtre intérieurement avec beaucoup de soin ; leur orifice du côté des pièces sera cintré en briques. Lors de la pose de ces briques, on contentera l'intérieur des tuyaux de préférence à l'extérieur. Les tuyaux desservans les cheminées de cuisine, et ceux des caloriféres de l'étage souterrain, seront continués dans les dimensions qui ont été indiquées à cet étage jusqu'au faîte de la construction. Cette observation s'étend à tous les étages, et ne sera pas reproduite.

Les *tuyaux de ventouses* des lieus d'aisances seront en poterie dite Anglaise de vingt-cinq centimètres de diamètre intérieur.

Tous les joints de ces divers tuyaux seront bien faits en plâtre fin. Un fort enduit les recouvrira dans les épaisseurs des planchers et à dix centimètres au-dessus et au-dessous, de manière à éviter la filtration de la fumée ou des gaz par les joints des tuyaux. Les *tuyaux des ventouses* seront enduits dans toute la hauteur.

Les *tuyaux de fosses* d'aisances seront scellés en plâtre, avec collets en ciment Romain. Les *tuyaux de chûte* et de ventouse ne seront placés que lorsque les enduits des murs et cloisons contre lesquels ils doivent s'appliquer, auront été faits, non seulement dans la hauteur des étages, mais même dans l'épaisseur des planchers.

Les *cabinets d'aisances* seront construits et ventilés d'après les indications des Architectes, et recevront à l'intérieur des sièges.

Le *plancher* haut en fer sera cintré en plâtras et plâtre, et plafonné. Les plâtras bistrés devront être rejetés. Les *plafonds* des escaliers seront lattés, jointifs et enduits. Les galeries, les passages, les vestibules, et toutes les pièces de cet étage, seront décorées de *corniches* et moulures, à l'exception des magasins et des boutiques dont la décoration intérieure ne fait pas partié du présent devis. Les *plafonds* du passage de porte-cochère et ceux des vestibules seront en outre décorés de moulures riches formant caissons. Les *plafonds* rampants des escaliers autres que ceux de service, et ceux des paliers de ces escaliers, seront également décorés de moulures formant caissons.

Crépis et Enduits.—Les murs en moëllon et en briques, les tuyaux de cheminée, de chûte et de ventouse, les cloisons, &c., seront crépis et enduits en plâtre fin. Les enduits sur les murs et cloisons seront faits avant la pose des tuyaux de chûte et de ventouse. Suivant qu'il en sera fait mention sur les plans, les *plâtres des escaliers*. devronts être préparés pour recevoir le stuc, qui fait partie des travaux réservés ou pour recevoir une décoration en peinture. Dans le premier cas, l'entrepreneur de maçonnerie devra s'entendre avec le stuccateur. Dans le second cas, les enduits des murs devront être dressés à la régle.

Tous les *scellements* seront faits en tuileaux et plâtres, ou ciment

Romain, d'après les instructions des Architectes. Tous les solins d'usage seront faits avec soin. Les *lambourdes* au-dessus des planchers seront scellées en plâtre avec solins et chaînes en travers. Les lambourdes au-dessus seront scellées en asphalte, systême Baudoin Frères (ces lambourdes sont scellées dans une nappe continue de bitume). Ce scellement en asphalte ne fait pas partie du présent marché.

Toutes les *cheminées* seront construites avec jambages, en plâtras et plâtre, tuyaux carrés en pigeonnage, dans la hauteur de l'étage, pour se raccorder avec les tuyaux en briques ou poteries; languette de faux coffre; manteaux en plâtre pur, massifs sous les foyers. Les *chambranles* feront partie de la *marbrerie* réservée.

Les intérieurs et les ventouses seront decrits à la Fumisterie.

Les *tuyaux de descente* sur les façades, tant sur les rues et place, que sur les cours, seront scellés à trois centimètres de distance du mur, avec isolement: ceux sur la Rue de Rivoli seront placés intérieurement.

Une *borne fontaine*, en pierre de liais, ornée de sculptures, d'après les dessins des Architectes, sera placée dans la cour principale.

Observation générale sur la Nature des Pierres.—Toutes les pierres employées au rez de chaussée seront de la meilleure qualité et dans les espèces ci-après. Les *jambes étrières* et les piles sur la Rue de Rivoli et en retour auront les assises de retraite, en roche de Laversine, ou analogue, et le surplus, jusques et y compris le sommier des arcs en *roche de Bagneux*, ou roche équivalente. Les autres *voussoirs des arcs* et les tympans seront en pierre dure franche. Parmi les piles au fond des galeries, celles destinées à porter seront en roche de Bagneux, ou équivalente; les autres seront en pierre franche. Les sommiers des arcs seront de même nature que les piles. Les arcs et tympans qui ne porteront pas seront en pierre de Vergelé. Les *murs sur la cour* auront une assise en roche dure de Bagneux ou équivalent; des piles en roche de l'Oise, des fermetures en banc royal. Les *piles et dosserets intérieurs* seront en roche de Bagneux. Il en sera de même pour les parpaings sous les passages de porte-cochère, et cela attendu la perfection que l'on veut obtenir dans ces parties destinées à rester sans peinture. Les parties de remplissage des passages de porte-cochère entre les chaînes principales, et au-dessus des parpaings, seront en Banc Royal de Forget, 1^{ere} qualité; les piles, les chaînes, &c., qui sont destinées à être couvertes de peinture ou de menuiserie, seront en roche de Vitry de 1^{ere} qualité. Les seuils principaux et les premières marches des grands escaliers, seront en liais

Cliquart de Creteil, très dur, très fin, et sans coquille. Les seuils secondaires et les premières marches des petits escaliers, seront en roche de Vitry. Les Architectes se réservent de juger quels seront les seuils secondaires.

Dans *les tailles de pierres*, l'emploi de la boucharde est expressément interdit, à l'exception de la taille de la Laversine. Tous les parements destinés à rester apparents, seront layés, ragréés, et jointoyés, soit en plâtre fin, soit en ciment Romain. Les parties destinées à recevoir de la sculpture, seront épannelées à la demande du Sculpteur. La sculpture est réservée. Cette observation s'applique à tous les étages de la construction, sans qu'il soit nécessaire de la reproduire.

Observation générale.—Toutes les moulures en pierre ou en plâtre, extérieures ou intérieures, seront essayées en plâtre à l'endroit qui sera indiqué par les Architectes, et à la hauteur qu'elles devront avoir en exécution et dans une longueur d'un mètre environ. Cette observation s'applique également à tous les étages.

ENTRESOL.

Observation générale. — Cet étage sera construit de la même manière que le premier étage dans toutes ses parties, aux exceptions ci-après. Les murs et arcs sur la Rue de Rivoli formeront arcs appareillés par claveaux. Le choix des pierres employées sera fait, comme il a été dit ci-dessus aux observations générales. Il en sera de même pour les murs au fond des galeries, construits et appareillés en arcades. Le *mur de face* sur la Rue St. Honoré sera composé de travées, formant arcs semblables à ceux des autres façades, et d'autres travées formées par la continuation des piles du rez de chaussée, lesquelles seront surmontées de plates bandes, en mêmes pierres, appareillées par claveaux. Les *arcs* seront surmontés de consoles, destinées à porter le balcon du 1er étage, et les claveaux des plates bandes pourront eux-mêmes former consoles pour porter ce balcon. Le tout conformément aux détails des Architectes. Les *murs de face sur la cour* seront également composés d'arcades en Banc Royal, reposant sur ces piles en Roche de l'Oise, décrites au rez de chaussée. Les *murs de face*, et au fond des galeries auront les saillies nécessaires pour les clés et moulures. Les *murs intérieurs* seront construits, soit en moëllons, soit en briques dures façon Bourgogne, hourdées en plâtre, selon les distinctions qui ont été établies au rez de chaussée. Les Architectes pourront exiger que les points d'appui principaux ou les murs d'une section trop faible en raison des baies dont ils sont percés, soient hourdées en ciment Romain. Ils pourront également exiger que quelques uns de ces murs dont le poids pourrait nuire à la construction soient construite en *briques tubulaires.* Les murs mitoyens seront construits *en moëllons* durs de roche, hourdés en plâtre.

Grands Poitrails. — Il sera placé partout où la construction l'exigera des poitrails en fer qui seront décrits à la Serrurerie. Ces poitrails seront posés, scellés et cintrés comme il a été dit ci-dessus pour le rez de chaussée.

Le *grand escalier* sera continué dans la hauteur de l'entresol, avec dessus de marches en pierre de liais, suivant la description du rez de chaussée.

PREMIER ÉTAGE.

Les *murs de face* seront en pierre de taille, savoir :—Les trumeaux en bonne pierre fine de Méry, bien sèche et bien saine, ou en pierre de Vergelé fine, et de première qualité, également bien saine et bien sèche, avec toutes les saillies des profils et moulures qui seront indiqués sur les détails des Architectes. Les *moulures* des murs de face seront copiées sur celles des façades de la Rue de Rivoli ; ou suivant les détails graphiques des façades sur les autres rues. Les *grands balcons* sur les rues et places seront composés de consoles en roche de Bagneux ou équivalent placées au-dessus des arcades, ou faisant partie des voussoirs et claveaux des slates bandes ; ainsi qu'il a été dit ci-dessus à l'entresol ; et d'un cours de dalles en clicquart dure, dont l'épaisseur sera déterminée par les profils et détails. Le tout dans les meilleures conditions de solidité. Les *murs de face* sur la grande cour seront en bonne pierre tendre, dans les mêmes conditions que les façades sur les rues, avec saillies pour des moulures très simples.

Les *baies* dans les murs en pierre seront cintrées en pierres appareillées par claveaux sur linteaux en fer, qui seront décrits à la Serrurerie. Dans les façades sur la rue et les cours les *appuis* seront en pierres de roche de bonne qualité ravalés de moulures avec regingots tailles en pente et larmiers.

Les *murs de refend* seront en moëllons durs, hourdés en plâtre de cinquante centimètres d'épaisseur ; ou, si l'épaisseur est moindre en briques dures façon Bourgogne, hourdées en plâtre ; les dosserets et les arcs des baies de portes seront, soit en même briques, hourdées en ciment Romain, soit en pierres franche d'au moins cinquante centimètres de queue. Les Architectes se réservent de faire hourder en ciment les points d'appui principaux, et ceux d'une section trop faible en raison des baies dont ils seront percés, et d'employer la brique tubulaire pour les murs dont le poids pourrait nuire à la construction.

Les *fermes* nécessaires à la construction seront décrites à la Serrurerie ; elles seront posées par l'entrepreneur de maçonnerie, scellées et cintrées comme il a été dit ci-dessus pour le rez de chaussée.

Les *murs mitoyens* seront en moëllons durs parfaitement ébousinés, hourdés en plâtre ; les lits en seront bien faits, serrés à fin d'éviter des tassements inégaux. On observera toutes les précautions indiquées au rez de chaussée. Cette observation s'applique à tous les étages de la maison, sans qu'il soit besoin de la reproduire.

Les *baies* dans les murs de refend *seront cintrés* soit dans les murs en moëllons, en moëllons francs appareillés par claveaux sur linteaux en fer décrits à la Serrurerie; soit au moyen de plates bandes en briques façon Bourgogne de vingt-deux centimètres de hauteur, sur linteaux doubles en fer cintrés en élévation. Cette observation s'applique aux divers étages de la maison, et ne sera pas reproduite.

Les *tuyaux de cheminées* et de ventouses seront conforms à ce qui a été dit ci-dessus pour le rez de chaussée. Les *chausses d'aisance* continueront en fonte comme il a été dit au rez de chaussée. Tous les *scellements* des fermes en fer, des solives, des poteaux de distributions, des gonds, des pattes, &c., seront faits en tuileaux et ciment Romain ou plâtre suivant l'emplacement. Tous les percemens de murs pour le passage des tuyaux de ventouse ou de chaleur relatifs à des travaux dûs par le forfait seront faits et pratiqués aux frais de l'entrepreneur de maçonnerie, par ses ouvriers, et raccordés en tuileaux et ciment Romain. Ces deux observations s'appliquent aux divers étages de la construction, sans qu'il soit nécessaire de les reproduire.

Le *plancher* haut en fer sera *cintré en plâtras* et plâtre, et enduit en plâtre fin, dressé à la règle ferrée. Les *plafonds d'escaliers* seront continués et décorés comme au rez de chaussée. Les plafonds seront décorés de *corniches* en plâtre, dans toutes les pièces, suivant les profils donnés par les Architectes. Les *enduits, ravalements* solins, scellements, &c., seront faits comme il a été dit au rez de chaussée avec le plus grand soin. Les *enduits* des petites cours seront teintées avec de l'ocre et gâché avec le plâtre. Ces observations s'appliquent au rez de chaussée, ainsi qu'aux divers étages de la maison, et ne seront pas reproduites.

Toutes les *cloisons légères* seront lattées sur bois de bâteau; hourdées, crépies et enduites en plâtre pur ; il n'y aura ni poteaux, ni traverses visibles dans les salons, dans les salles à manger et les anti-chambres, et partout où les plâtres devront recevoir de la peinture sans papier. Les Architectes indiqueront les *cloisons* qui devront être *sourdes*. Elles seront composées d'un lattis double, avec hourdis doubles et enduits. Les Architectes indiqueront les parties où les *parquets* devront être *faits avant les cloisons*, en prévision de changemens ultérieurs de distribution. Dans ce cas, il sera placé à la partie inférieure des cloisons, des socles en chêne, reposant sur le parquet pour éviter qu'il ne reçoive l'humidité des plâtres.

Les *lambourdes* seront scellées sur l'aire avec chaînes en travers. Elles devront être parfaitement de niveau et seront au besoin encastrées dans l'aire, ou élevées sur des chaînes en plâtras hourdées.

Les *cuisines* seront *carrelées* en carreaux de Massy de premier choix. Les paliers des escaliers de service seront également carrelés.

Les *cheminées* seront composées de jambages en plâtras ravalés, de planches de manteaux en plâtre, de tuyaux pigeonnés de même largeur que la cheminée, avec languettes intérieures rampantes, terminées par une gorge se raccordant avec le tuyau en poterie.

Faux Coffres.—Les *vides* existants entre les tuyaux et les murs, seront *remplis* soit par des armoires si l'emplacement le permet, soit par des faux coffres pigeonnés en plâtre. L'inclinaison et l'irrégularité résultant de la disposition des tuyaux de cheminée seront rachetés au moyen de faux coffres pigeonnés. Les *fourneaux et cheminées* de cuisine seront composés de trois jambages en briques de onze centimètres d'épaisseur frottées et jointoyées, supportant le cendrier carrelé en carreaux d'âtre ; au-dessous la paillasse garnie d'un fourneau dit *économique*, de quatre réchauds, et d'une poissonnière ; la dite paillasse carrelée en fayence, sauf l'âtre qui sera carrelé en terre cuite. Le cendrier divisé par des cloisons de refend, et fermé par une façade pigeonnée avec pans coupés pour le fourneau économique. Au-dessus de la paillasse deux ou trois consoles galbées supportant le manteau ravalé de moulures et la hotte. Au pourtour de la paillasse régnera un revêtement en carreaux de fayence de deux rangées de hauteur.

Les *éviers* seront en pierres de roche fine, de 65 centimètres sur 1 mètre, elles seront supportées par des jambages en briques, de onze centimètres d'épaisseur, frottées et jointoyées. Le revêtement en carreaux de fayence sera continué au pourtour des dites pierres.

E, 3ÈME, ET 4ÈME ÉTAGES.

Les deuxième, troisème et quatrième étages au-dessus de l'entresol, sont absolument conformes au premier étage pour toutes les natures d'ouvrages, sauf les exceptions ci-après. ***L'entablement***

principal du bâtiment sera en deux parties : la *cimaise* en pierre dure aura au moins vingt centimètres d'épaisseur ; le reste de cet entablement sera en pierre de Méry ou de Vergelé comme le surplus de la façade sur la rue. *L'entablement* sur la grande cour sera placé au-dessus du quatrième, il sera en Vergelé. Au quatrième étage au-dessus de l'entresol, les *murs de face* sur les autres rues que celle de Rivoli pourront être en retraite sur l'alignement. Cette disposition étant de nature à exiger beaucoup de soins dans l'exécution, l'entrepreneur devra suivre toutes les prescriptions que les Architectes croiront utiles de lui donner pour éviter tous les inconvénients qui peuvent résulter de cette disposition. La *façade en retraite* sera en briques tubulaires, hourdées en plâtre de vingt-deux centimètres d'épaisseur nue. Elle sera ravalée de deux parements, et décorée extérieurement de moulures en plâtre formant chambranles et corniches.

Double Planchers de Terrasse.—Dans le cas où l'on ferait une terrasse sur ces rues, cette terrasse serait formée au moyen d'un double plancher en fer qui sera décrit à la Serrurerie. Ce double plancher sera hourdé en pots creux, et recouvert d'une aire en plâtre destiné à recevoir le plomb qui sera décrit à la Plomberie. On ménagera une ventilation entre les deux planchers.

5ÈME ÉTAGE AU-DESSUS DE L'ENTRESOL ET COMBLES.

Les *murs de face* sur la grande cour ne continueront pas à cet étage qui est Mansardé. *L'entablement* a été décrit avec le quatrième étage. Les *murs de face* sur les petites cours continueront comme aux étages inférieurs.

Le *plancher* haut du cinquième étage, ou faux plancher, sera latté, cintré en augets et ravalé, ainsi que les plafonds rampants des lambris. Au-dessus du plafond il y aura une aire en plâtre sur bardeau. Les *souches des cheminées* au-dessus des combles, isolées ou adossées, seront en briques de Bourgogne frottées et jointoyées à l'Anglaise ; bandeaux de couronnement ravalés de moulures et larmiers en pierre de bon Vergelé ferré ; au-dessous, astragales de même nature. Les têtes seront en même pierre de Vergelé avec harpes : le tout conformément au détail des Architectes, et au modèle des souches existantes Rue de Rivoli. Au-dessus seront des mitres en terre cuite à bourrelets bien entaillés et scellés en ciment Romain.

Les *cloisons* de distribution et celles nécessaires pour équarrir les lambris, seront lattées, hourdées en plâtre et ravalées. *Observation générale.*—Le *reste de la maçonnerie* sera comme aux étages inférieurs en se conformant toujours aux détails des plans et a ceux qui seront donnés par les Architectes.

Outre les cabinets d'aisance semblables à ceux du premier étage il sera fait un *cabinet pour des latrines* communes, dont le sol sera établi sur un double plancher, isolé du plancher principal, et garni en bitume de quinze millimètres sur une aire en plâtre. Des carreaux carrés en terre cuite imprégnés de bitume seront relevés tout autour dans la hauteur d'un mètre et scellés en bitume. Le siège d'aisance sera scellé en ciment Romain ou en bitume.

Nature des Sols.—Une partie de la superficie de ce cinquième étage sera planchéiée ; à cet effet les lambourdes seront scellées comme au premier étage. L'autre partie sera carrelée en carreaux durs de Massy bien droits. Les plans indiquent les pièces carrelées et celles planchéiées.

Etais, Cintres, Couches, &c.—L'entrepreneur de Maçonnerie fournira les étais, couches et étrésillons nécessaires pour supporter les constructions voisines, tant pour les fouilles que pour les reprises en sous œuvre ; les cintres et couches, pour le cintrage des voutes et des arcs, et enfin tous les bois accidentellement nécessaires à la construction.

Conditions particulières à l'Exécution des Travaux.

Art. 1^{e}. Les *matériaux* employés dans les travaux seront de la meilleure qualité dans l'espèce indiquée au devis.

Art. 2^{e}. Les *pierres* seront homogènes, sans bousins, fils, moies, et autres défectuosités, et conformes aux échantillons déposés au bureau de l'Agent, ou à proximité, pour servir de confrontation avec les matériaux de l'exécution.

Ces pierres seront approvisionnées par blocs convenables à l'appareil.

Art. 3^{e}. Les *moëllons* seront d'un échantillon convenable pour former liaison, selon l'emploi auquel ils seront destinés. Ils seront sans bousins. Le moëllon dur sera seul employé dans la fondation et jusqu'à un mètre au-dessus du sol du rez de chaussée.

Art. 4^{e}. Les *meulières* seront de la meilleure qualité, grandes, poreuses, légères et dures. Toutes les caillasses et meulières présentant une face lisse à la cassure seront rejetées ; elles seront hourdées à bain de mortier ou plâtre, parfaitement en liaison. L'intérieur du mur sera garni par de grandes meulières, et non par des éclats, de manière à former une liaison parfaite. Elles seront purgées de toutes parties terreuse.

Art. 5^{e}. Les *plâtras* seront de plâtre pur, sans empreintes de fumée et non salpêtrés.

Art. 6°. Le *mortier* pour le hourdis des murs sera composé d'une partie de chaux hydraulique, et de trois parties de sable, parfaitement mélangées au moyen d'une machine et fait à couvert.

Art. 7°. Les *briques* seront régulières, bien cuites, entières, sans gerçures ni bavures, et non gélives et auront les dimensions indiquées par les devis, ou, à défaut d'indication précise, par l'Architecte.

Art. 8°. Les *mitres*, *tuyaux* ou autres poteries seront fabriquées avec soin, bien cuites, sans fêlures, des dimensions indiquées au devis ou par l'Architecte.

Art. 9°. La *chaux* sera bien cuite et non éventée, elle sera parfaitement éteinte et purgée de biscuit.

Art. 10°. Le *sable* sera purgé de tout mélange. Le ciment sera composé des matières indiquées au devis par l'Architecte.

Art. 11°. Le *plâtre* sera bien cuit, non éventé, non mélangé de parties étrangères, dites musique.

Art. 12°. Les *lattes* seront de cœur de chêne, droites sans aubier ; leur largeur sera de 35 millimètres et leur épaisseur de quatre millimètres au moins.

Art. 13°. Tous *les clous* mentionnés dans le présent article seront en fer doux, fins, bien forgés et affilés. Les clous d'épingle seront à large tête. Les lattes seront attachées avec des clous d'épingles de 27 millimètres à large tête. Les clous lardés dans les solives de 32c. en 32c. de chaque côté, pour la liaison des augets aux solives, auront de 40 à 45 millimètres de longueur.

Art. 14°. Tous les matériaux et approvisionnement mentionnés dans les articles précédents seront sujets à vérification, et dans le cas où ils seraient reconnus de mauvaise qualité, ou mal ouvrés, l'entrepreneur sera tenu de les faire enlever sur-le-champ et d'en fournir d'autres, s'ils sont jugés non recevables ; et s'ils étaient susceptibles d'une autre destination, il devra se conformer aux instructions qui lui seront données à cet effet.

Art. 15°. Les *mortiers et bétons* seront composés des substances prescrites, et dans les proportions et de la manière indiquées par le devis. Dans le cas ou le devis ne s'expliquerait pas à cet égard, le mortier pour hourdis sera composé d'une partie de chaux hydraulique et trois parties de sable ; celui pour béton pour fondation d'une partie de chaux et cinq parties de sable. Enfin, le *béton* sera composé de portions égales de mortier et de gravier. Ils seront toujours faits à couvert, bien broyés et bien corroyés. La *chaux et le sable* seront d'abord parfaitement mélangés au moyen d'un manège, ou toute autre machine qui sera approuvée par l'Architecte, mais jamais à bras d'homme. Le *mortier terminé* sera ensuite mêlé au gravier avec le plus grand soin et sur des plateaux en bois. Toutes ces opérations seront faites à couvert. La *chaux* sera parfaitement hydraulique. Le sable et le gravier seront siliceux et purgés de toutes parties terreuses.

Art. 16^e. Les *constructions en fondations* seront exécutées conformément aux instructions de l'Architecte, et l'entrepreneur ne pourra les commencer qu'après que le sol aura été reconnu convenable par cet Architecte. Les fondations en béton et celles en blocage seront faites le plus possible d'un seul jet de niveau: bloquées contre les terres et pilonnées par couches de 15$^{c\cdot}$ d'épaisseur. Dans le cas d'éboulement des terres, le surcroit de travail qui en résultera sera à la charge de l'entrepreneur. En tous cas, il lui est formellement interdit de se servir d'encaissement en planches qui resteraient noyés entre le béton et les terres rapportées du côté des éboulemens.

Art. 17^e. Les *libages*, s'il y avait lieu d'en mettre, seront en pierres dures, leurs lits bien dressés, et les joints suffisamment dégrossis: leur liaison, leur gisement et leur hourdis seront exécutés d'après les précautions indiquées par l'Architecte.

Art. 18^e. Les *moëllons* seront de la dureté nécessaire à leur destination; ils seront ébousinés, dressés sur leurs lits, posés à bain de mortier par arase de niveau et respectivement de même hauteur et en liaison autant que possible par parpaings et boutisses.

Art. 19^e. Les précautions indiquées dans les quatre articles précédents, seront applicables aux murs en élévation: leur hourdis en plâtre sera également à bain. Les murs de 0^{m}·50 et au-dessous, contiendront la quantité de parpaings qui sera indiquée par l'Architecte, dans une longueur d'assise donnée.

Art. 20^e. La *saillie* à compter du nu du mur, pour les moëllons employés dans les masses des corniches, sera au plus du tiers de la longueurs des dits moëllons.

Art. 21^e. Les *lits de pierre* seront régulièrement dressés sans démaigrissement. Chaque assise sera dérasée et mise parfaitement de niveau, avant la pose de l'assise supérieure, et non à la demande du parement, dont le ragrément devra rectifier la surface, dans le cas ou l'écarrissage du lit avec le parement ne serait pas d'équerre; les joints devront être aussi d'équerre avec le parement, au moins dans une longueur de 0^{m}·16 centimètres.

Art. 22^e. Les *joints des voussoirs*, des claveaux, étant considérés comme lits, ne pourront être démaigris; leur épure sera toujours soumise à l'approbation de l'Architecte.

Art. 23^e. La *taille des parements* et des moulures sera faite avec le plus grand soin, et de manière à donner à chaque sorte d'ouvrage la forme et les dimensions déterminées par le devis.

Art. 24^e. Les *ragrêments et rejointoyements*, soit en rélèvement des balèvres soit en plein, seront faits avec soin.

Art. 25^e. Les *évidements* de pierres, pour dégagements des harpes à la rencontre, et pour la liaison des murs de face et de refend, lorsque l'Architecte n'aura pas prescrit qu'elles soient posées en besace, ne pourront excéder un quart de cube.

Art. 26^e. L'entrepreneur est responsable de tous *les éclats*, écornures et autres accidents qui pourraient arriver à la pierre ou autres matériaux, à moins qu'un attachement régulier ne fasse connaitre la cause de l'accident et à qu'il doit être imputé.

Art. 27^e. Les *briques* seront trempées dans l'eau, à fur et à mesure de leur mise en œuvre, posées à bain. Elles seront posées de niveau, régulièrement avec liaison suffisante et écartement et les joints de deux millimètres au plus, et à bain de plâtre ou autre mortier suivant les indications porteés au devis descriptif.

Art. 28^e. Les *aires en plâtre* seront faites sur bardeaux ou sur lattis jointif : chaque latte clouée sur chaque solive ou par chaîne selon l'indication de l'Architecte. Le *plâtre* formant l'aire aura six centimètres d'épaisseur au moins ; il sera gâché sans mélange, et avec le moins d'eau possible. Il sera effectué des isolements longitudinaux ou transversaux, pour obvier à la poussée du plâtre.

Art. 29^e. Les *hourdis pleins*, soit pour paliers d'escaliers, soit pour trémie de cheminée seront faits en plâtres, hourdés en plâtre, avec lancis de rapointis en suffisante quantité.

Art. 30^e. Les *lambourdes* à rez de chaussée seront scellées sur bitume, tassaux, dans les formes prescrites par les Architectes. Les scellements de lambourdes dans les étages supérieurs seront faits à mesure de la pose des dites lambourdes qui seront garnies en plâtre au-dessous dans toute leur longueur et contrebutées par des augets cintrés aussi en plâtre.

Art. 31^e. Les *cloisons légères* seront lattées sur chaque face de dix centimètres de milieu en milieu des lattes, les hourdis seront faits en gros plâtre, et rempliront exactement tous les vides ; on aura soin d'étrésillonner les poteaux d'huisserie ou autres, pour résister à la poussée des plâtres.

Art. 32^e. Les *languettes en plâtre* pour tuyaux de cheminée, seront pigeonnées à la main enduites au dedans, d'un seul plâtre lissé à la truelle et avec crépi et enduites extérieurement ; en dernier lieu dressé et ragrée à vive-arête. Ces languettes devront avoir 7 à 8 centimètres d'épaisseur enduit compris. Les angles intérieurs seront toujours arrondis sur un rayon de cinq centimètres et les costières et refends devront être liés par des arrachements en mur de 8 centimètres de profondeur. On suivra d'ailleurs les indications du devis pour les tuyaux construits en matériaux différents.

Art. 33^e. Les *planchers en fer* seront cintrés suivant les indications du devis descriptif, les uns en globes de grés de première qualité et posés avec le plus grand soin, à bain de plâtre, les autres en plâtres sains, posés en claveaux, hourdés en plâtre pur, augets formant chaînette entre les solives.

Art. 34^e. Les *planchers en bois*, les faux planchers et les lambris formés de chevrons seront garnis d'augets faits sur lattis espacés de dix centimètres de milieu en milieu avec lancée de clous dans chaque intervalle de lattis. Ces augets seront cintrés en gorge, et leur moindre épaisseur sera de trois centimètres ; on n'y employera que du plâtre pur. Les planchers en fer ou en bois ne seront cintrés qu'après la couverture faite, à moins que les Architectes n'en donnent l'ordre écrit.

Art. 35^e. Les *enduits et ravalements* sur grosse maçonnerie neuve seront bien dressés, les joints de moëllons trop unis seront hachés pour faciliter l'adhérence des plâtres ; la surface du crépi sera rustiquée de manière que les enduits y soient parfaitement adhérents.

Art. 36^e. Les enduits et ravalements sur vieux murs seront faits sur hachements à vif, et renformis partiel pour en dresser les surfaces qui seront arrosées d'eau pour faciliter l'adhérence du gobetage.

Art. 37^e. Toutes les *moulures* poussées au calibre ou raccordées à la main seront lissées sans jarrets.

Art. 38^e. Les *calibres* nécessaires pour pousser les corniches et moulures en plâtre seront au compte de l'entrepreneur de Maçonnerie ; si des changements avaient lieu dans les profils par ordre de l'Architecte, on tiendrait compte à l'entrepreneur de la dépense que ces changements lui auraient occasionnée. Les calibres seront tous ferrés et faits avec le plus grand soin. Cependant l'entrepreneur devra, sans aucune allocation particulière, faire un modèle en plâtre de $1^{m}\cdot00$ de chaque espèce de moulure, soit en pierre, soit en plâtre, en se conformant à cet égard aux ordres de l'Architecte.

Art. 39^e. Tous les *cintres massifs* et patés pour baies et voûtes seront à la charge de l'entrepreneur de Maçonnerie, et compris dans le prix de chaque objet. Ces *cintres et pâtés* seront parfaitement faits suivant les courbes que l'on voudra donner aux voûtes de sorte que les voûtes en béton, par exemple, s'il en était ordonné, n'aient par besoin d'être ragréées après le décintrement. Toute espèce *d'échafauds et de levages* seront à la charge de l'entrepreneur de Maçonnerie. Ces échafauds seront faits avec tout le soin requis par l'Architecte.

Le *carrelage* en carreaux de Bourgogne ou de pays devra être de la meilleure qualité dans l'espèce portée au devis. Les carreaux devront être durs, bien cuits, sonores, sans gerçures ni écornures ; ceux gauches, ou plus minces que l'échantillon adopté par l'Architecte, seront refusés et enlevés de l'atelier. Le *hourdi des carreaux* à rez de chaussée sera fait en mortier de chaux hydraulique, composé d'une partie de chaux et de 3 parties de sable. Les *joints* seront égaux et bien remplis. Les *soudures* le long des murs seront faites en partie de carreaux coupés droits sans cassures ni épaufrures.

COUVERTURE ET PLOMBERIE.

Etage Souterrain.—Pour les *cabinets d'aisance*, il sera fourni, suivant la distinction indiquée au plan, soit des *cuvettes* en faïence à l'Anglaise à valve et sans effets d'eau, avec tirage et tous leurs accessoires ; modèle fort et de moyenne grandeur, au choix des Architectes, soit des cuvettes en fonte, systême Parrizot, dont la fourniture est spécialement à la charge de l'entrepreneur de Plomberie. Manchons de raccordement en plomb, pour les deux genres de cuvette. En outre, pour les *cuvettes* Parrizot ; goulette en plomb pour l'écoulement des urines. Dans les fosses d'aisances, *flotteurs* conformes aux ordonnances de police.

Les travaux pour la *distribution des eaux* de la ville et du *gaz*, seront décrits à rez de chaussée.

Les *corniches* des devantures de boutiques sur les rues, seront couvertes en zinc No. 14, posé à dilatation libre, et suivant les régles de l'art, avec bandes d'égoût, bandes de solin, &c. Les *cabinets d'aisance* seront traités comme à l'étage souterrain, les uns à cuvette à valve, les autres à cuvette à bascule, systême Parrizot, et toujours conformément aux indications des plans. Les *tuyaux de descente* seront décrits avec les combles. Les *cuvettes à syphon* en fonte, qui seront placées à l'entrée du tuyau souterrain, seront fournies et posées par le Plombier assisté du Maçon.

Distribution des Eaux de la Ville.—Il sera fait une prise sur la conduite des eaux de la ville. A cet effet, l'entrepreneur s'entendra avec le plombier de la ville, pour les travaux extérieurs de prise d'eau, et lui paiera la valeur de ces travaux. Il lui paiera également la valeur des travaux accessoires, tels que tranchée, dépavage, fouille et remblai, repavage, dépose et repose du trottoir. Le *tuyau principal* sera d'une forte épaisseur et d'un diamètre suffisant pour amener l'eau à tous les points indiqués sur les plans. Ce tuyau sera muni d'un *robinet* d'arrêt en bronze, et sera dirigé suivant les indications des plans. L'entrepreneur exécutera les travaux nécessaires aux distributions indiquées sur les plans, tels que tuyaux d'embranchement en plomb, robinets d'arrêt, et robinets de distribution.

Distribution du Gaz. Travaux Extérieurs.—L'entrepreneur de Plomberie fera sur la grosse conduite passant dans la rue les travaux nécessaires au branchement, tels que, tranchée, dépavage, fouille, remblai et repavage, dépose et repose de trottoirs, percement de la grosse conduite, et fourniture de la conduite en fer étiré d'au moins 54 millimètres de diamètre intérieur. Un *double robinet* en cuivre avec coffre et porte à charnières en fonte, suivant la nouvelle ordonnance, sera posé dans la façade à l'endroit indiqué sur les plans. L'entrepreneur de Plomberie fera les percements et raccords nécessaires. Le *compteur* avec robinet en cuivre à clef, devra être capable d'alimenter trente becs et sera placé à l'endroit indiqué sur les plans. L'entrepreneur de Plomberie fournira tous les supports nécessaires, et même une armoire pour renfermer le compteur. La *conduite principale,* depuis le compteur jusqu'au bâtiment du fond, sera en plomb étiré de 54 millimètres de diamètre intérieur au moins, et de 5 millimètres d'épaisseur, avec nœuds de soudure ; clous à crochets, percement de murs et tous autres travaux accessoires nécessaires à la pose. Les *tuyaux d'embranchement* seront en plomb étiré d'épaisseur moyenne. Leur diamètre sera déterminé en raison du nombre de becs que chacun d'eux doit alimenter. Ces embranchements seront posés avec tranchées, percements, raccords, nœuds de soudure, et tous autres accessoires nécessaires. Les *divers appareils d'éclairage* sont indiqués sur les plans. Leur modèle sera conforme à l'indication, et dans les meilleures conditions de solidité et d'économie pour la consommation quotidienne du gaz.

Entresol.—La *plomberie* à l'entresol sera la même qu'au premier étage, qui sera ci-après décrit. Les *revêtements* en menuiserie placés sur les Rue St. Honoré et autres, au-dessus des devantures de magasins, auront leurs saillies *recouvertes en zinc* No. 14, posé suivant les régles décrites au rez de chaussée.

Premier Etage.—Les *garde robes* des cabinets d'aisance seront à valve et à effet d'eau, systême Havart, ou équivalent, de bonne qualité, avec cuvettes en porcelaine de moyen modèle. On fournira pour chaque *cabinet d'aisance un réservoir en plomb* de

$0^{m}\cdot003^{mm}$ d'épaisseur, d'une contenance de 5 à 6 décalitres, avec revêtement en menuiserie, qui sera decrit en son lieu. Un *tuyau en plomb* mettra en communication le réservoir et la garde robe. Enfin, on fournira un *manchon en plomb,* pour le raccordement de chaque garde robe, avec la culotte en fonte. *Cuvettes en fonte* a bascule systême Parrizot de 30 à 40 centimètres de largeur, qui seront fournies par l'entrepreneur de Plomberie, et posées partout où les plans l'indiqueront. *Tuyaux de branchement* en plomb et en fonte, se raccordant avec la descente des eaux pluviales crapaudines en cuivre au fond des cuvettes. Il sera établi des *tuyaux spéciaux,* qui seront de même nature que ceux de descente des eaux pluviales, decrits avec le comble. Ces tuyaux sont indiqués sur les plans.

Les *pierres d'évier* seront garnies chacune d'une crapaudine en cuivre à croisillon scellée à l'étain, et d'une bonde en cuivre, fixée à une chaînette ; tuyau en fort plomb de 40 millimètres pour l'écoulement des eaux ménagères.

Deuxième, Troisième, et Quatrième Etages au-dessus de l'Entresol.—La plomberie des 2^{e}, 3^{e}, et 4^{e} étages au-dessus de l'entresol sera généralement semblable à celle du 1^{e} étage ci-dessus décrit. Le *terrasson des balcons* pourra être couvert en tables de plomb de 3 millimètres d'épaisseur, posées avec recouvrements et relief au pourtour des murs. La partie sur le bord de l'entablement formera chéneaux. Les *solins* en plâtre seront recouverts d'une bande en zinc, au-dessus du relief en plomb. *Crapaudines et manchons* de raccordement avec les tuyaux de descente.

Cinquième Etage et Comble.—La *couverture* sur les rues et place, sera *en ardoises,* grandes, carrées sur voliges. Cette couverture sera très soignée en raison de sa position. Les faces sur la cour, dans la hauteur du 5^{e} étage, pourront monter carrément ou former des brisis, qui seraient, dans ce cas, en ardoises, comme sur la rue.

Egouts de 2 tuiles de Bourgogne grand modèle. *Crochets de service,* qui seront fournis par le Serrurier et posés solidement par les Couvreurs, entre 2 feuilles de plomb. *Chemin de Service.*—Pour le service des couvreurs et des fumistes il sera établi des chemins de service en plomb, avec marches en plomb soudées. Ils seront établis en nombre égal à celui des bâtiments, et à proximité des trappes de sorties, d'après le désignation des Architectes. Les *jouées de lucarnes* seront recouvertes en ardoises grandes carrées. Elles seront couvertes en zinc No. 14, posé à dilatation libre avec bandes d'égout, tasseaux et recouvrements.

Socles ou pieds droits en zinc No. 14, devant les lucarnes, derrière les cheminées, et partout où ce sera nécessaire, pour éviter les filtrations d'eaux. Les *châssis* du 5^{e} étage sur les rues et sur la place, seront verticaux; à cet effet, il sera établi au devant de chaque châssis, une tranchée dont les jouées seront recouvertes en zinc No. 14, et dont le terrassement sera en plomb. Les *noues* en plomb de 3 millimètres d'épaisseur. Noquets en zinc. *Solins en plâtre* au-dessus des retroussis en zinc, et de la couverture en ardoises. *Goutières des châssis* à tabatière en plomb. La *couverture* de la partie supérieure des combles sera en zinc No. 14, avec reliefs d'au moins 3 centimètres, se relevant sur tasseaux en sapin, couverts en zinc; les têtes des clous cachées par des capsules en zinc soudées. Les *feuilles* seront agraffées sur leur longueur et se relèveront en tête sur les tasseaux en sapin, comme sur les côtés, elles s'agrafferont dans le bas, au droit des brisis, sur une bande de zinc No. 16, fortement clouée sur les voliges. Le *voligeage* sous le zinc, sera en sapin de $0^{m}{\cdot}012^{m}$·, sur $0^{m}{\cdot}110$ de largeur. *Solins en plâtre* par-dessus les bandes de solin en zinc, qui devront être fixées avec des clous assez saillants pour gripper les plâtres. Les *bandes de solins* rampantes sur les cheminées en briques, seront à redans entrants dans les joints de la brique. Les joints seront faits ensuite au mastic d'Hil. Sur les soufflets des trappes, des châssis à tabatière, et des toitures vitrées, revêtements en zinc No. 12. Noues en plomb, comme il a été dit ci-dessus.

Sur la Rue de Rivoli et sur la place, les chêneaux en plomb seront combinés avec le recouvrement des balcons, ainsi que cela a été décrit au 4^{e} étage. Sur la Rue St. Honoré et les autres rues, la disposition des chêneaux sera indiquée ultérieurement.

Pour le raccordement des chêneaux avec les tuyaux de descente, il sera fourni des *manchons en plomb*, et *des crapaudines* en cuivre. Il sera placé, suivant l'indication du plan, des *goutières en zinc* No. 14, de 25 centimètres de développement. Crochets espacés de $0^{m}{\cdot}80^{c}$· d'axe en axe; moignons, revers, talons, et tous autres accessoires. Sur les rues, *les goutières* formeront chêneaux et seront placées au-dessous de la corniche.

Il sera placé des *tuyaux de descente* en quantité suffisante pour l'écoulement des eaux pluviales, et conformément aux indications des plans. Ces tuyaux seront tous fournis et posés par le Plombier, ainsi que leurs colliers. Les tuyaux de descente sur la Rue de Rivoli et sur les autres rues à arcades, seront en fonte, de 13 à 15 centimètres de diamètre et posés intérieurement. Les tuyaux de descente sur les autres rues seront en fonte ornée de 9 à 11 centimètres de diamètre. Les tuyaux de descente sur la grande cour seront sembables, mais, sans ornements. Tous les tuyaux seront posés à 3 centimètres du pied des murs, et fixés par des colliers en fer de Berry, decoupés et évidés circulairement; ils seront posés à plat dans les joints des tuyaux. Les tuyaux de descente dans les petites cours seront en zinc No. 14, de 9 à 11 centimètres de diamètre fournis et posés par le Plombier; colliers, fournis et posés idem. La partie inférieure de ces tuyaux, qui passera à travers les pièces du rez de chaussée, sera en fonte unie. Les tuyaux spéciaux pour les eaux ménagères seront dans les mêmes conditions que ceux des eaux pluviales.

Les cuvettes des *latrines communes*, à bascule, en fonte, seront fournies et posées par le Plombier. Manchons de raccordement et goulottes en fort plomb. Dans ces latrines, urinoirs spacieux.

Les *garde robes* et autres cabinets seront comme aux étages inférieurs; manchons de raccordement en plomb. *Cuvettes ménagères* comme aux autres étages partout où les plans les indiqueront.

Conditions particulières à l'Exécution des Travaux de Plomberie.

Les plombs, zincs et fonte, seront d'une épaisseur régulière, sans soufflure, feuilletage ni gerçure. Dans aucun cas, *les tuyaux*, de quelque métal qu'ils soient, ne pourront être retrécis pour les ajustements avec les autres, le diamètre intérieur du conduit, devant toujours rester le même. Les *tuyaux de descente* seront isolés à 3 centimètres des murs, et disposés de manière que le bout du tuyau inférieur embrasse le bout du tuyau supérieur.

CHARPENTE.

Rez de Chaussée.—Observation générale.—Tous les cintres, les étais, et les bois accidentellement nécessaires à la construction, seront à la charge de l'entrepreneur de Maçonnerie. Il n'y aura pas de pans de bois à rez de chaussée.

Les *poitrails, linteaux et planchers* seront en fer, et décrits à la Serrurerie. Cette observation s'applique aux divers étages, sans qu'il soit besoin de la reproduire. Le *grand escalier* sera demi-Anglais; le limon en chêne de premier choix, et de treize centimètres d'épaisseur, sera disposé pour recevoir les marches, en chêne de choix de 8c. d'un seul morçeau, sans écoinçons, et portant moulures profilées et contre-profilées. Contre-marches en même chêne, de vingt-sept millimètres. Marches palières en même chêne refait; moulure de 25 centimètres de largeur, sur 30 à 35 centimètres de hauteur. Bascules pour paliers s'il y a lieu. Faux limon en chêne de 8 centimètres pour éviter de saper les murs. *L'escalier secondaire* sera composé de limons en chêne, de 11 centimètres d'épaisseur, de marches en chêne de cinq à six centimètres d'épaisseur, d'un seul morçeau, et sans écoinçons, portant moulures profilées et contre-profilées et de contre-marches en chêne de 27 millimètres. Le reste comme pour le grand escalier, sauf les dimensions. Les *escaliers de service* seront demi-Anglais, composés de limons en chêne de 8 centimètres d'épaisseur; marches en chêne quart-de-ronnées, de 4 à 5 centimètres d'épaisseur; contre-marches en chêne de 27 millimètres. Le reste comme pour le grand escalier, sauf les dimensions.

Entresol.—Les *escaliers* seront continués dans la hauteur de l'entresol, suivant la description du rez de chaussée.

Premier Etage.—Le *grand escalier* sera comme au rez de chaussée. Le limon de 13c. d'épaisseur recevra les marches de 8c. en chêne de choix, d'un seul morçeau, sans écoinçons, emportant moulures profilées et contre-profilées; le reste comme au rez de chaussée.

L'escalier secondaire et les escaliers de service continueront comme au rez de chaussée.

Pans de Bois.—*L'intention des Architectes est d'éviter les pans de bois*, qui présentent le double inconvénient de tasser plus que les murs, et de n'être pas incombustibles. Toutefois, quelques uns des murs indiqués aux plans, pourront être remplacés par des pans de bois, si la convenance des constructions l'exige. Dans ce cas, l'entrepreneur se conformera aux détails des Architectes pour la disposition des bois, leur grosseur, et leur qualité.

Deuxième, Troisième, et Quatrième Etages.—Dans le cas où sur la Rue St. Honoré, la façade au 4$^{e.}$ étage au-dessus de l'entresol serait en retraite, elle serait formée par un *pan de bois en chêne*, de sciage, de 15 centimètres d'épaisseur de bois, disposé pour rejeter le poids de cet étage sur les murs de refend, et conformément aux détails des Architectes.

Les Escaliers.—L'escalier principal s'arrêtera au 4$^{e.}$ étage. L'escalier secondaire continuera jusqu'au 5$^{e.}$ etage. Enfin les escaliers de service seront prolongés jusqu'au 5$^{e.}$ étage.

Comble.—Le comble quoique commençant au 4$^{e.}$ étage, ne sera décrit qu'au 5$^{e.}$ etage.

Cinquième Etage au-dessus de l'Entresol et Comble.—Les *combles* régneront dans la hauteur du 4$^{e.}$ et du 5$^{e.}$ étage, ils seront cintrés et brisés suivant le profil indiqué sur la coupe. Ils se composeront de pannes et faitages en chêne, supportés :—1° Par les murs de refend. 2°. Par des fermes, formant pans de bois de refend, qui seront en chêne de sciage de 15 à 18 centimètres d'épaisseur; et conformes, pour la disposition et les grosseurs, aux détails qui seront donnés par les Architectes; ces fermes seront cintrées sur la Rue de Rivoli; elles seront également cintrées sur les autres rues, si cela résulte des prescriptions de l'administration et des études définitives. Les pannes et faîtages seront en chêne d'environ 20c.

de grosseur, plus ou moins suivant la portée. *Etages au-dessus de l'Entresol et Combles.*—Ils seront au besoin, remplacés partiellement par des fers à double T, toutes les fois qu'ils ne pourront pas être éloignés convenablement des tuyaux de cheminées, ainsi que cela sera décrit à la Serrurerie. Le comble sera complété par des sablières en chêne placées sur les murs, et par les autres pièces qui seront indiquées par les Architectes. Les chevrons de bris, et ceux des parties cintrées du comble, seront en chêne de 8 centimètres sur 10 de grosseur, et espacés d'environ 33 centimètres d'axe en axe. Les autres chevrons et empannons seront en sapin de 8 centimètres sur 8. Le tout conformément aux détails des Architectes.

Au 4^{e}. étage, sur la Rue de Rivoli, seront des *lucarnes en chêne* refait, avec moulures, en tout semblables à celles des façades de cette rue. Elles seront complétées par des sablières en chêne des jouées, et des petits combles avec arêtiers, chevrons et empannons. Au cinquième étage, il sera établi des *lucarnes* semblables sur la cour. Au même étage, il pourra être établi, et au-dessus des lucarnes des *tranchées dans le comble* circulaire, destinées à éclairer cet étage, et formées chacune par un petit plancher de terrasse, un petit pan de bois vertical, et deux pans de bois de jouée. Ainsi qu'il a été dit au 1^{e}. étage, quelques uns des murs indiqués au plan, pourront être remplacés par *des pans de bois* si la convenance des constructions l'exige.

Le *faux plancher* au-dessus du 5^{e}. étage sera composé de solives en sapin, de 6 à 8 centimètres, sur 15 à 20, espacées de 33 centimètres de milieu en milieu.

MENUISERIE.

Etage Souterrain, Huisseries et Poteaux de Caves.—Pour les cloisons en briques, il sera fourni des huisseries et poteaux en chêne, de huit centimètres carrés. Les dits poteaux seront avec refouillement pour la brique, ceux des huisseries seront avec feuillures pour les portes. Les *portes* à l'intérieur des caves, seront en chêne neuf brut, de trente-quatre millimètres avec deux barres chanfreinées chacune de quatorze centimètres sur quarante-un millimètres ; au droit de ces barres, les planches seront dressées. Pour les cloisons de distribution des pièces plafonnées, il sera fourni des *poteaux et huisseries en chêne*, de huit centimètres carrés, et à quatre parements, disposés d'ailleurs comme il est dit plus haut pour la brique et les portes.

Dans les dites pièces plafonnées, *bâtis de portes* en chêne de 40 millimètres sur 80; les Architectes indiqueront s'ils devront être encastrés ou non. Dans ce cas, ils seront ravalés d'une moulure, et formeront chambranles à capucine. Les *portes* des pièces plafonnées seront en chêne; bâtis de 34 millimètres d'épaisseur, arrasés, à petits cadre ou a glaces, selon l'emplacement. L'épaisseur des panneaux sera de 27 millimètres. Les panneaux seront à plates bandes. Elles seront pleines, ou disposées pour être vîtrées, suivant les indications des Architectes.

Outre les *châssis de soupiraux* qui seront décrits à rez de chaussée, il sera placé à cet étage pour fermer les soupiraux intérieurement, des *châssis verticaux* tout en chêne, composés chacun d'un dormant de 40 millimètres avec pièce d'appui et un châssis de 34 millimètres; à petit cadre, avec montant au milieu, et avec jet d'eau.

Parquets.—Les pièces qui seront *parquetées* sur bitume, le seront en chêne de 27 millimètres (système Baudoin). Le bitume de ces parquets est compris dans la menuiserie. Sur les murs et cloisons des pièces parquetées, et où les plans l'indiqueront *revêtements* de $1^{m}\cdot50$ de hauteur, de 27 millimètres d'épaisseur; par frises avec baguettes poussées sur les joints; les dites frises fixées sur traverses de 4c. sur 11 scellées sans être encastrées. Ces revêtements devront être assemblés à dilatation libres.

Les *escaliers* de cet étage sont en pierre, et font partie de la maçonnerie.

Les *cabinets d'aisances* destinés à recevoir une cuvette en faïence seront garnis d'un *siège en chêne*, avec abattant idem. Le devant et les côtés seront aussi en chêne avec plinthes par le bas. Dans les pièces parquetées, dans les cuisines et les cabinets d'aisances à l'Anglaise, *stylobates* en chêne de 13 millimètres sur 150 millimètres. Dans les mêmes pièces, *baguettes d'angles* en chêne, et demi-baguettes pour les répéter au besoin. Les *revêtements* ci-dessus décrits seront couronnés d'une cimaise en chêne profilée d'après le détail des Architectes.

Ecuries.—Les *mangeoires* seront en chêne refait de 0.08 d'épaisseur, et d'environ 50 centimètres de largeur, sur $30^{c\cdot}$ de profondeur. Contre le mur, revêtement en chêne de $0.05^{c\cdot}$ d'épaisseur, à l'intérieur, tasseaux chanfreinés pour remplir les angles. Ces mangeoires seront supportées par des potences en fer décrites à la Serrurerie. Les *rateliers* seront composés d'une traverse haute et d'une traverse basse de 0.08^{c} de gros, en chêne, à angles abattus. Entre les deux traverses, roulons en chêne tournés suivant le profil des Architectes, et espacés de 0.15^{c} d'axe en axe. Ces *rateliers* seront maintenus par des ferrure entaillées sur la face, et décrites à la Serrurerie.

Il sera placé des *cloisons vîtrées* dans les endroits, qui seront indiqués par les plans ; elle seront en chêne, poteaux de 6 à 8 centimètres sur 8 à 10 centimètres ravalés de moulures ; les soubassements seront en menuiserie d'assemblage ; bâtis chêne de 34 millimètres. Les parties supérieures de 34 millimètres d'épaisseur avec petits bois. Les *portes vitrées* dans les cloisons seront en chêne, de 34 millim., à petits cadres, avec panneaux d'appui de 27 millim., et petits bois en chêne dans les parties vitrées.

Observation générale.—Toutes les menuiseries appliquées aux murs de cet étage, telles que revêtement, stylobates, cimaises, chambranles, &c., seront revêtues sur le parement appliqué, d'une couche de brai gras au pinceau, ou de glû marine. Cette couche de brai ou de glû est spécialement à la charge de l'entrepreneur de Menuiserie.

Rez de Chaussée.—La totalité du rez de chaussée sera *parquetée*, à l'exception de quelques dégagements communs, savoir :—Le vestibule du grand escalier ; celui de l'escalier de service ; le passage à la descente des caves. Ce parquet sera également en frise de chêne de 34 millimètres sur 110 millim. posées à l'Anglaise. Les boutiques seront parquetées en point de Hongrie. Les *lambourdes* seront en chêne, et auront 5 centim. sur 8. Elles seront posées sur bitume.

Il n'y aura point de *croisées* proprement dites à cet étage, à moins qu'elles ne résultent des plans, et dans ce cas, elles seront analogues à celles décrites ci-après au premier étage. Même observation pour les *volets* intérieurs, et pour les persiennes extérieures.

Les *châssis verticaux* destinés à éclairer l'étage souterrain, seront tous en chêne et composés chacun d'un dormant de 40 millimètres, avec pièce d'appui, d'un châssis de 34 millim. à petits cadres, avec montant au milieu, portant aux faces battement, et avec jet d'eau, le châssis ouvrant à soufflet. Les *trappes* pour jeter le bois seront en menuiserie, ou en fonte, suivant les distinctions établies au plan. Les trappes en menuiserie seront en chêne de 0.40 d'épaisseur, d'assemblage et arrasées ; elles seront ferrées sur un bâtis dormants, en chêne de $0^{m}.054$ millim. sur 0.08c. Les trappes en fonte seront décrites à la Serrurerie. A cet étage, dans le plancher haut, seront placés des *châssis horizontaux* au-dessous des petites cours. Ces châssis seront composés de bâtis dormants en chêne de $0^{m}.040^{mm.}$ d'épaisseur, lesquels recevront des petits bois en fer, et des châssis ouvrants, qui seront décrits à la Serrurerie.

Les *portes vitrées* à deux ventaux auront leur partie d'appui en chêne ; bâtis de 40 millim. d'épaisseur, panneaux de 25 millim. élégis de plates-bandes avec moulures ; grands cadres aux deux parements ; la partie vitrée au-dessus sera en chêne de 40 millim. d'épaisseur, à grands cadres, dont un fixe et l'autre mobile, pour recevoir le verre. Battements milieu rapportés. Traverses d'imposte élégies de moulures et de denticules ; impostes dormantes ou ouvrantes, selon le besoin. Les *portes à panneux*, à deux ventaux, seront en chêne à grands cadres, bâtis de 40 millimètres d'épaisseur ; panneaux à plates bandes, de 27 millim. semblables pour le surplus, aux portes vitrées. Il sera placé *des fausses portes* en chêne, partout où la symétrie le demandera et où les plans l'indiqueront ; ces fausses portes seront en chêne ; bâtis de 27 millim. ; le parement apparent répètera exactement les portes situées parallèlement. Le deuxième parement sera brut et enduit de brai gras. Les *portes à un ventail* à panneaux, ou vitrées seront analogues aux précèdentes, mais en bois de 34 millim. pour les bâtis, et de 22 millim. pour les panneaux, qui seront à plates bandes, mais sans moulures sur les dites plates bandes. Toutes les portes seront ferrées sur un bâtis en chêne de 54 millim. sur 8 centim. *Ces bâtis et contre-bâtis* pourront être encastrés ou non encastrés, suivant les instructions des Architectes, et dans ce dernier cas ils seront ravalés de moulures, et formeront chambranles. Les *portes-cochères* seront tout en chêne de premier choix, à deux ventaux avec guichets. Le grand bâtis aura 11 centimètres d'épaisseur, le deuxième bâtis aura 8 centimètres ; les panneaux auront 54 millimètres ; les grands cadres auront 10 centimètres de profil. Les *bâtis* seront élégis de pilastres et de moulures sur les arètes ; le battant de fermeture, à gueule de loup, sera décoré d'une colonnette rapportée, cannelée, avec base et chapiteau tournés, ou de tout autre motif d'ornamentation ; le tout dégrossi pour la sculpture, si les Architectes l'exigent. Les *panneaux* seront à compartiments, carrés ou circulaires, suivant les dessins des Architectes, avec plates-bandes à moulures pour le haut, et tables saillantes à moulures ; idem pour le bas. Ces *portes-cochères* seront surmontées d'une corniche à denticules, couronnant les ventaux, et d'une imposte demi-circulaire, soit pleine, et dans le même style que les portes, soit évidée pour recevoir les panneaux en fonte, qui seront décrits à la Serrurerie. Toutes les parties de ces portes seront traitées avec richesse et grandeur, conformément aux détails des Architectes. On pratiquera une entaille pour recevoir une boîte à journaux. Le tout conformément aux détails des Architectes.

Les *cloisons vîtrées* seront composées de poteaux en chêne de 6 centimètres sur 10, ravalés de moulures ; de panneaux d'appui en chêne, de 34 millim., à petits cadres, avec panneaux de 27 millimètres ; montants et petits bois de trente-quatre millim., et à petits cadres. Les *cloisons dites légères* seront composées d'huisseries et poteaux en chêne, de huit centimètres, carrés, corroyés, feuillés, nervés, de coulisses, de remplissages en chêne de bâteau. Les entretoises seront en fer, et décrites à la Serrurerie. Les Architectes indiqueront les parties où les parquets devront être faits avant les cloisons, en prévision de changements ultérieurs de distribution. Dans ce cas, il sera placé, à la partie inférieure des cloisons, des socles en chêne, reposant sur le parquet, pour éviter qu'il ne reçoive l'humidité des plâtres.

Il sera placé des *placards d'armoires* partout où il sera nécessaire, pour régulariser les pièces, et dissimuler les renfoncements produits par les tuyaux de cheminée, et de moins d'un mètre de largeur. Ces placards seront tout en chêne ; bâtis dormant de 34 millim. d'épaisseur, bâtis ouvrant de même épaisseur, panneaux de 20 millimètres. Tablettes en sapin, espacés de 50 centimètres sur la hauteur, et posées sur tasseaux.

Stylobates.—Il y aura dans le vestibule et dans la loge du concierge des *stylobates* de 25 centim. de hauteur, en chêne portant moulures, et des cimaises en chêne portant également moulures, des chambranles et contre-chambranles, des baguettes d'angle en chêne, et des demi-baguettes. Les *stylobates* d'escalier seront en chêne ; ils suivront le rampant des marches, ainsi que les cimaises ; le tout ravalé de moulures. Dans la partie entre les plinthes et les cimaises, il sera posés des moulures formants cadres, pour figurer un lambris. Ces cadres seront en chêne jusqu'à $1^{m}\cdot50^{c\cdot}$ de hauteur ; le surplus sera en sapin.

Mains Courantes.—Le grand escalier aura une main courante en acajou de St. Dominique, profilée à gorge et à baguettes de $0^{m}\cdot05^{c\cdot}$ sur $0^{m}\cdot08^{c\cdot}$ L'escalier de service aura une main courante à gorge, en noyer, de $0^{m}\cdot04^{c\cdot}$ sur $0^{m}\cdot05^{c}$. A chaque croisée, *barres d'appui* en chêne, profil à gorge. A cet étage, il y aura des *sièges d'aisances* en fonte, systême Parrizot, et des sièges d'aisances systême Havard. Pour ces derniers, indiqués sur les plans, la menuiserie sera faite conformément à ce qui est indiqué pour les sièges d'aisances au premier étage.

Les *cuvettes des eaux ménagères,* décrites à la Plomberie, seront revêtues ultérieurement de caissons en chêne, fixés sur tasseaux, avec des vis, et disposés pour se démonter aisément. Les *devantures de boutiques* comprendront le rez de chaussée et l'entresol. Les *devantures au fond des galeries,* varieront suivant la destination des travées dans lesquelles elles seront appliquées. Les unes seront garnies de portes à deux ventaux avec une ou deux montres (A et B sur les plans). D'autres seront garnies de portes à une ventail également à une ou deux montres (C et D sur les plans). D'autres enfin formeront une seule montre.

Les diverses travées sont séparées par des *caissons*, composés de poteaux et traverses en chêne, soubassements, cimaises, frise d'enseigne, architrave, et corniches. *Couvre-caissons* en chêne, d'assemblage, à grands cadres, avec plates-bandes. Traverse au milieu, flottée. Les *devantures* avec une porte à deux ventaux, et une seule montre, seront composées ainsi qu'il suit:—Une *huisserie en chêne* reposant sur le socle en pierre, et fixée par le haut sur la traverse d'enseigne. La dite huisserie élégie de moulures. *Pour la montre, un châssis* en chêne, de 40 millimètres, à petits cadres, reposant sur le soubassement en menuiserie, et s'élévant jusqu'à la traverse d'enseigne. Il est destiné à recevoir des montants intermédiaires, en fer à feuillures, qui seront décrits à la Serrurerie.

Le *soubassement* au-dessus du socle en pierre sera en chêne de 34 millim. pour être revêtu en marbre, et couronné d'une cimaise en tôle; il sera évidé d'un grand soupirail, avec bâti dormant en chêne. Les *cimaises en tôle*, et les *moulures en fonte* ornée formant cadres des grands châssis, des portes et des panneaux d'impostes, ainsi que les châssis en fer des soupiraux, seront décrits à la Serrurerie, et ne font pas partie de la menuiserie. Les *volets* seront en chêne et sapin d'assemblage de 27 millimètres.

Porte à deux ventaux en chêne de 54 millimètres, avec soubassement à grands cadres et à plates-bandes; la partie haute, destinée à être vitrée, élégie de moulures. Au-dessus de la porte, *imposte semblable* aux châssis des montres, ouvrant à soufflet. Au-dessus, *frise d'enseigne* en chêne. *Architrave et corniche* en chêne. Il y aura un *caisson* pour former le grand soupirail. Les *devantures* avec une porte à deux ventaux et deux montres, sont analogues à la précédente, sauf les modifications résultant de leur disposition. Les deux montres seront sans montants intermédiaires. Il y aura deux petits *soupiraux*. Les *devantures* avec une porte à un ventail et une montre seront semblables à celles ci-dessus décrites et marquées A, sauf que la porte sera à un seul ventail. Les *devantures* avec une porte à un ventail et deux montres seront analogues à celles décrites ci-dessus, et marquées B et C. Les deux montres seront sans montants intermédiaires. Il y aura deux soupiraux. Les *devantures* avec une seule montre seront semblables à ce qui a été décrit ci-dessus (A) en ce qui concerne:—Le châssis de montre; le soubassement et le soupirail; les cimaises en tôle et moulures en fonte; les volets; la frise d'enseigne; l'architrave et la corniche; le caisson de soupirail. Les devantures au-dessus des frises d'enseigne seront décrites avec l'entresol. Dans les rues sans arcades, chaque *devanture de boutique* aura $0^{m}\cdot16^{c\cdot}$ de saillie, et sera composée de montants, bâtis, et traverses en chêne formant la baie, avec imposte au-dessus; deux grands châssis de montre, et de deux caissons aux extrémités. Les *bâtis* seront élégis de moulures suivant les détails des Architectes.

Le *soubassement des devantures de boutiques,* au-dessus du socle en pierre, sera en chêne, de $0^{m}\cdot034$ millim. revêtu en marbre, et couronné d'une cimaise en tôle; il formera ressaut au droit des caissons et pilastres. Les *cimaises en tôle* et les moulures en fonte ornée, formant cadres des grands châssis, des portes et des panneaux d'impostes, ainsi que les châssis en fer des soupiraux, seront décrits à la Serrurerie, et ne font pas partie de la Menuiserie. On placera sous chacun des *châssis* de montre des soupiraux, dans les dimensions et dans les dispositions indiquées par les détails qui en seront ultérieurement donnés. Les feuilles des *volets* seront d'assemblage, en chêne et sapin, de vingt-sept millimètres d'épaisseur. Chaque devanture aura des *couvre-caissons* en chêne, d'assemblage à grands cadres, avec plates-bandes, traverse au milieu flottée. Les *châssis* des devantures, destinés à recevoir les glaces, seront en chêne de quarante-et-un millimètres sur huit centimètres. Ils seront élégis de moulures. Les *portes* seront à deux ventaux en chêne de cinquante-quatre millimètres, avec soubassement à grands cadres et à plates-bandes; la partie haute, destinée à être vitrée en glaces, sera élégie de moulures. Les *impostes* seront semblables aux châssis des montres, mais de quarante-un millimètres d'épaisseur ouvrant à soufflet.

Les *frises d'enseignes* seront en chêne, avec ressauts au droit des caissons, et partie ouvrante pour le passage des stores. Les *architraves et corniches* seront en chêne. La *couverture des corniches* sera en planches de sapin, pour recevoir de zinc. Il y aura des *parcloses* en chêne pour former l'intervalle entre la devanture et le mur de face. Caissons pour fermer les grands soupiraux. Les *autres dispositions* à l'intérieur de la devanture, ne font pas partie du marché à forfait, étant ordinairement à la charge du locataire.

En résumé, le tout sera établi conformément aux détails des Architectes. Dans la cour, pour clore chaque travée, *devanture en retraite* du parement extérieur du mur, ainsi composée. *Montants,* bâtis et traverses en chêne, huisserie en chêne de huit centimètres carrés, élégie de moulures, deux bâtis de soupiraux, soubassement en chêne de 34 millimètres. *Plinthes* en chêne, chanfreinées, cimaises idem, ravalées de moulures, deux châssis de soupiraux en chêne de 40 millimètres. Deux *grands chassis* en chêne de 40 millimètres d'épaisseur, élégis de moulures, volets portatifs en feuilles d'assemblage chêne et sapin de 27 millimètres. Une *porte* à un ou deux ventaux en chêne de 54 millimètres, avec soubassements à grands cadres et à plates-bandes, le tout élégi de moulures à petits cadres et disposé pour être vitré ; une imposte au-dessus de la porte, de 40 millimètres d'épaisseur, ouvrant à soufflet ; à l'intérieur, caissons en chêne pour fermer les soupiraux. Le tout conformément aux détails des Architectes. Les *cloisons intérieures* des boutiques ne font pas partie du présent marché.

Entresol.—Observation générale.—Pour la menuiserie, on suivra les divers détails indiqués ci-après pour le premier étage au-dessus de l'entresol. Aux exceptions ci-après :—Les *devantures de boutiques* continueront à l'entresol. Leur construction et décoration seront analogues à celles décrites au rez de chaussée. Leurs volets seront en chêne et sapin d'assemblage, et placés intérieurement. Les *croisées* seront semblables à celles du premier étage, à l'exception de celles au-dessus des portes-cochères, et dans les arcs en pierre, qui seront exécutées suivant les indications données par les Architectes, lors de la construction. A cet étage, les *persiennes et volets* intérieurs seront de disposition particulière, et exécutés conformément aux détails des Architectes. Les *châssis horizontaux* décrits au rez de chaussée pourront être exécutés à l'entresol, par préférence, si les Architectes l'indiquent. *Observation générale.*—En résumé, la menuiserie de l'entresol, en ce qui concerne les parquets et tous autres travaux, sera semblable à celle décrite ci-après.

PREMIER ÉTAGE AU-DESSUS DE L'ENTRESOL.

Parquets.—Toutes les pièces de cet étage seront parquetées savoir :—Les antichambres principales, les passages conduisant aux grandes pièces, et touts les pièces à feu *en point de Hongrie.* Les *couloirs* et les cabinets à l'Anglaise. Tous les parquets seront en frise de chêne de 27 millimètres sur onze centimètres par bouts de 60 centimètres au plus. Les *lambourdes* seront en chêne de trente-quatre à quarante millimètres d'épaisseur, sur quatre-vingts centimètres ; leur écartement sera réglé en raison de la division résultant de l'axe des portes et croisées ; et dans aucun cas, il ne pourra dépasser 45 centimètres d'axe en axe ; leur sens sera indiqué par les Architectes. Dans les pièces principales qui seront indiquées par les plans, le parquet sera en chêne de choix et en point de Hongrie retourné. Dans des pièces divisées par des cloisons légères, le parquet passera sous les dites cloisons, selon les indications qui seront données par les Architectes. Les *paliers d'escaliers* seront également *parquetés*. Le bois employé sera sans défauts, ni nœuds, ni aubier; il sera parfaitement sec, et l'entrepreneur responsable de la dessication des bois, dans le délai de deux ans après la pose. Cette observation s'applique aux divers étages de la construction, sans qu'il soit nécessaire de la reproduire.

Les *croisées ou porte-croisées* auront leurs dormants en chêne de cinquante-quatre millimètres, châssis de 40 millimètres, à gueule de loup de 54 millimètres; pièces d'appui de 8 centimètres sur 11; jets d'eau de 10 centimètres de haut, sur 8 centimètres d'épaisseur. Aux croisées sur les rues, et places qui devront recevoir des glaces, il sera placé à l'intérieur une moulure mobile, ou une plate-bande en fer, suivant le détail donné par les Architectes. Les portes croisées auront les panneaux du bas, en chêne de 27 millimètres, à grands cadres et à table saillante. Aux croisées, *impostes ouvrantes* ou dormantes, en même bois, lorsque les plans l'indiqueront. Il y aura des *volets avec caissons*. 1°. A toutes les croisées et porte-croisées qui n'auront pas de persiennes extérieures. 2°. A toutes celles donnant sur des balcons. Ces volets seront par feuilles en chêne de 27 millimètres d'épaisseur, à petits cadres, avec panneaux en chêne de quinze millimètres; ces volets seront renfermés dans des caissons formés par des bâtis en chêne, de quatre centimètres, sur huit à dix, revêtus de chambranles très simples. Ces caissons seront accompagnés de plafonds en même bois. Il y aura des *persiennes* en chêne à toutes les croisées et portes-croisées situées à l'est, à l'ouest, ou au midi. Elles auront 34 millimètres d'épaisseur. Les lames de 12 millimètres d'épaisseur auront 5 millimètres de recouvrement; elles seront brisées partout où elles ne pourront développer sans cela. Les *croisées* sur les petites cours seront en chêne à un ou deux ventaux, suivant l'emplacement; les bâtis dormants auront 40 millimètres; ils seront à noix en gueule de loup, et élégis de petits cadres.

Les *portes à deux ventaux* seront en chêne; bâtis de 40 millimètres panneaux à plates-bandes moulurées de 27 millimètres en chêne idem, à grands cadres, avec moulures mobiles, formant battements aux deux faces, afin d'éviter le vide que pourrait occasionner le retrait des bois. Ces battements seront fixés par des vis en quantité suffisante. Des *fausses portes* seront placées dans les salons et les pièces principales, lorsque ce sera nécessaire pour la symétrie. Elles seront en chêne de 27 millimètres avec un panneau apparent, répétant exactement les autres portes, et un parement brut. Il y aura également des *portes flottées*, figurant, d'un parement une portion de porte à deux ventaux et de l'autre une porte à un ventail. Les *portes à un ventail* seront en chêne, bâtis de 34 millemètres d'épaisseur, panneaux de 20 millimètres, à grands ou petits cadres, suivant l'emplacement et aux deux parements, avec plate-bande moulurée. Les *portes seront vitrées* dans les endroits où ce sera nécessaire, pour éclairer les corridors, les cabinets et d'autres pièces. Elles seront semblables aux portes pleines, soit à un ventail, soit à deux ventaux, mais évidées pour recevoir un verre double dépoli. A cet effet, on placera au pourtour de la partie vîtrée une moulure mobile pour recevoir le verre. Les *portes sous tenture* seront en chêne de 34 millimètres ; le deuxième parement sera à grands ou petits cadres, ou arrasé suivant l'emplacement. Tous les *bâtis des portes* seront en chêne de 40 millimètres sur huit centimètres. Les contre-bâtis en chêne de 27 millimètres sur 8 centimètres.

Les *cloisons* de distribution seront de celles dites légères. Elles seront composées d'huisseries, et de poteaux en chêne de huit centimètres sur huit corroyés, feuillés et nervés de remplissages en bois de bateau, espacés tant plein que vide. Les *entretoises* seront en fer, et décrites à la Serrurerie. Il sera fait plusieurs *cloisons légères et sourdes.* Ces cloisons seront composées d'huisseries et poteaux en chêne, de huit centimètres en largeur, sur 11 ditto d'épaisseur, d'entretoises accouplées et de remplissages, soit doubles, soit posées de champ, selon les instructions des Architectes. Pour *les cloisons* posées *sur parquets,* socle en chêne de 34 millimètres sur 0 008. Les *cloisons vitrées* seront composées de poteaux en chêne de 6 centimètres sur 10 centimètres, de panneaux d'appui en chêne de 34 millimètres à petits cadres, avec panneaux de 27 millimètres ; montants et petits bois de 34 millimètres à petits cadres.

Toutes les *portes* seront décorées aux deux faces par des *chambranles* et contre-chambranles en sapin, composés d'une moulure de 10 centimètres à 13 centimètres de profil, clouée sur le bâtis de manière à en cacher le joint. Dans les salons sur la rue, cette moulure aura 13 centimètres à 15 centimètres de largeur, et sera en deux parties, l'une de 40 millimètres d'épaisseur, l'autre de 10 millimètres. Aux croisées, chambranles en sapin composés de moulures très simples. Dans les salons, au-dessus des chambranles de portes, *attiques* composés d'une frise et d'une corniche formant couronnement des chambranles.

Les *châssis vitrés* éclairants les cabinets et passages seront en chêne de 34 mil., portes en chêne, de 0·027^{m} avec panneaux en chêne de 20 mil. arrasés, sous tenture au parement extérieur et à glace de l'autre. Tablettes en sapin de 27 mil. espacés de 50 cent. sur la hauteur, et posées sur tassaux. On fera partout où il sera possible des *placards* d'armoires en chêne. Dans toutes les pièces à feu, *plinthes* à moulures et *cimaises* riches. Dans les cabinets, *plinthes* et *cimaises* simples et sans moulures. Dans le grand escalier et l'escalier de service, *les plinthes* et cimaises suivront le rampant des marches ; les plinthes seront en chêne ; les cimaises en sapin. *Baguettes arrondies* en sapin, sur tous les angles. *Demie baguette* pour répéter les baguettes d'angles.

Listels moulurés dans les ébrasements des fenêtres. *Cadres décorants les Pièces principales.*—Dans les soubassements des chambres à coucher, et dans toute la hauteur des antichambres ou couloirs principaux continuant les dites, il sera fourni des *moulures en sapin figurant panneaux.* Dans les salons, toute la hauteur des murs sera décorée de moulures, figurant panneaux à grands cadres ; cadres idem dans le soubassement du grand escalier, et dans l'escalier secondaire, le tout d'après les dessins et profils des Architectes.

Les *mains courantes* des escaliers seront continuées comme à rez de chaussée. Dans les couloirs et dégagements, moulures formant *corniches.* Tous les balcons, dans les tableaux des croisées, seront surmontés *de barres d'appui* en chêne à gorge, semblables à celles décrites à rez de chaussée.

Il y aura à cet étage des *cabinets d'aisances* indiqués par les plans. Chaque *siège d'aisances* sera composé d'un dessus, percé de la lunette et d'une ouverture de coffre avec deux abattants saillants encadrés et élégis de moulures. Il sera disposé pour s'enlever facilement, à cet effet, il ne sera pas encastré dans les plâtres, et le joint sera recouvert par une plinthe rapportée. Plinthe au bas, le tout d'après les détails. Toutes les parties apparentes de ces sièges d'aisances seront, soit en chêne de Hollande, de choix, poli et ciré, soit en acajou, suivant les distinctions inscrites sur les plans.

Revêtement des Réservoirs.—Au-dessus du siège, dans chaque cabinet pour le *réservoir en zinc* ou en plomb, *un revêtement* en chêne de 27 millimètres, suivant la place, et composé :—D'un devant descendant jusque sur le siège, et couronné d'une cimaise élégie de moulures, d'un bâtis pour le dessus portant feuillures en quatre sens et d'un dessus. On posera des *tablettes d'encoignures.*

Les *cuvettes des eaux ménagères* décrites à la Plomberie, seront revêtues extérieurement de caissons en chêne, fixés sur tasseaux avec des vis, et disposés pour se démonter aisément. Dans chaque *cuisine,* il y aura deux rangées de *tablettes,* de 3 mètres chacune, et un cours de porte-casserolles, composé d'une barre en chêne chanfreinée de 3 mètres et d'un revêtement en sapin, également chanfreiné et de même longueur.

Deuxième, Troisième et Quatrième Étages au-dessus de l'Entresol—Observation générale.—Les deuxième, troisième et quatrième étages au-dessus de l'entresol seront absolument semblables au premier étage ci-dessus décrit, pour tous les travaux de Menuiserie. Au quatrième étage, la partie rampante du toît sera dissimulée par des cloisons légères, avec petites huisseries en chêne, et porte d'assemblage en chêne et sapin. L'escalier principal continuera jusqu'au 4^{eme.} étage, avec toutes les dispositions décrites dans le courant du présent devis. L'escalier de service continuera jusqu'au cinquième étage, ainsi qu'il est dit dans le courant du présent devis.

CINQUIÈME ÉTAGE ET COMBLE.

Observation générale.—Cet étage comprendra les chambres de domestiques et en outre, des *pièces* plus importantes *destinées à être louées,* le tout d'après les indications des plans.

La moitié environ de la superficie de ce 5$^{\text{e}}$. étage indiquée d'ailleurs aux plans, sera *parquetée* à l'Anglaise, en frises de chêne de 27 millimètres sur lambourdes en chêne de 5c. sur 8c. Les autres pièces seront carrelées. Les *croisées* seront en chêne de 34 millimètres d'épaisseur, avec jets d'eau, dormants de 54 millimètres avec pièces d'appui. Les croisées sur les petites cours seront semblables, mais avec dormants de 40 millimètres seulement. *Chambres de domestiques et leurs corridors.* Les huisseries de cet étage seront en chêne. Les *portes* des chambres de domestiques seront en chêne de 27 millimètres bâtis à glace d'un côté et à table saillante de l'autre, deux panneaux en chêne sur la hauteur ; dans les murs, bâtis dormants pour les portes, les dits bâtis en chêne de 4 centimètres sur 8 ; pas de contre bâtis. Pour dissimuler les renfoncements formés par les lucarnes et la pente du comble, *placards d'armoires* comme aux étages inférieurs. *Plinthes* en sapin de onze centimètres. Il y aura partout dans les corridors, une moulure formant *corniche,* et arrêtée seulement sur le plafond pour obvier aux effets du tassement.

Tous les joints d'huisserie seront cachés sur chacune des deux faces, par un listel en sapin faisant *chambranle* et contre-chambranle. Toutes les arêtes en plâtre seront garnies de *baguettes d'angles* en sapin de 20 millimètres, demi-baguettes semblables pour répéter les baguettes d'angles. Le *plancher des latrines sera doublé* par un faux plancher formé de chevrons de chêne, de manière à établir un courant d'air entre le plancher bas du 5$^{\text{e}}$. étage et celui des latrines.

A cet étage, il sera fourni des *sièges d'aisances* à l'Anglaise, simples, en chêne ordinaire, avec devant et abattant.

Dans les cloisons seront des *châssis verticaux* analogues à ceux décrits au premier étage, sauf l'épaisseur des bois, qui pourra être moindre. Les *châssis à tabatières* seront en fer, et décrits à la Serrurerie. *Trémies et Soufflets des Châssis* éclairants, soit les couloirs, soit les chambres au centre des bâtiments, seront placés au-dessus des trémies, qui seront formées par des cloisons légères. Ces cloisons se prolongeront au-dessus du comble pour former soufflet. Les *soufflets* seront formés de bâtis en chêne de 8 centimètres carrés avec trapillons en chêne. A chaque *trémie* on pratiquera une petite porte pour entrer dans les greniers perdus. Elle sera d'assemblage, bâtis chêne de 27 millimètres, panneaux sapin de 20 millimètres dans un bâtis dormant en chêne de 8 centimètres carrés. Les *châssis à tabatière* dont on a parlé ci-dessus ne suffisant pas pour le service des combles, on placera en outre deux trappes en chêne, avec bâtis dormants, trémie et soufflets, comme pour les châssis à tabatière. Les petites cours devant être couvertes par des *châssis en fer*, seront pourtournées chacune par un bâtis en chêne de 8 centimètres sur 11.

Chambres de Maîtres.—Pour les *pièces principales* et les chambres de maîtres, on se conformera à ce qui est prescrit au premier étage, sauf les épaisseurs des bois, qui seront moindres. Les *croisées* seront en bois de trente-quatre millimètres pour les châssis et cinquante-quatre millimètres pour les bâtis. Les *portes en bois* de trente-quatre millimètres. Le reste en proportion.

Conditions particulières à l'Exécution des Travaux de Menuiserie—Matériaux.—Il ne devra être employé, soit en *chêne*, soit en *sapin*, que des bois bien secs et bien choisis, sans défauts, aubier, nœuds vicieux ou tampons. Les bois seront dressés et corroyés de toutes faces, selon les prescriptions du devis, et de manière qu'il ne reste aucun trait de sciage ni flâche. Toutes les arêtes des bois de cloisons seront dressées de manière que les joints soient toujours en ligne droite et sans flâche. Les menuiseries seront apportées au bâtiment avant d'être peintes. L'entrepreneur sera tenu de changer toutes les parties de Menuiserie qui seraient devenues gauches par suite d'un mauvais assemblage ou d'une fausse position avant d'être en place.

SERRURERIE.

MENUS TRAVAUX, FERRURES ET FERMETURES.

Étage Souterrain.—La *ferrure des châssis* extérieurs, pour les soupiraux horizontaux ou verticaux, sera décrite à rez de chaussée, ainsi que les grilles des dits soupiraux. Les *châssis* placés à l'intérieur des soupiraux ouvriront à soufflet, et seront ferrés ainsi qu'il suit :—Pattes et équerres. Trois fortes *charnières* à feuillures à broches mobiles. Un fort *contre poids* monté sur une longue tige ronde, fixée à pattes, au bas du châssis, pour le tenir fermé. Pour le tenir ouvert, un tirage complet, composé d'un piton, de cordes, jeux de poulies en cuivre, et d'un arrêt scellé. Un fort loqueteau pour fermeture.

Chaque *porte de cave* à un ventail sera ferrée de deux fortes pentures de quatre-vingt-dix centimètres de long, avec gonds à scellements ou taraudés à pointe suivant l'emplacement, serrure de seize centimètres à peine dormant, de bonne qualité, gâche à scellement, ou à pattes taraudés et à écrou ; et battement en fer, suivant l'emplacement. Chaque *porte de cave* ou d'écurie, à deux ventaux, sera ferrée de six fortes pentures avec gonds à scellements, ou à écroux, suivant l'emplacement. Deux *forts verroux* à ressorts ; celui du bas à boucles, tous deux avec gâches. Une *forte serrure* à pêne dormant, compléte ; et un fort battant de loquet complet. Cette ferrure pourra être modifiée, et notamment remplacée, pour les portes battantes, par des ferrures spéciales, permettant d'ouvrir les portes, en poussant dans les deux sens. Chacune des *portes à un ventail des pièces plafonnées*, sera ferrée de trois *paumelles doubles* à T, de vingt centimètres, entaillées, et soit d'une serrure de sûreté avec deux clefs forées et gâche à baguette, soit d'une serrure de sûreté Bénarde de quatorze centimètres avec bouton double, olive en cuivre et gâche idem ; soit enfin d'une forte serrure à loquet, avec bouton double en cuivre et gâche encloisonnée à mantonnet. Le tout suivant l'emplacement et les indications des Architectes. Si la disposition des lambris l'exige, les paumelles devront être à nœuds saillants.

Ferrures des Portes à Deux Ventaux.—Chacune sera ferrée de six paumelles semblables aux précédentes, qui pourront également être à nœuds saillants, de deux forts *verroux* à ressort, avec gâches, enfin d'une *serrure* compléte, au choix des Architectes, ou d'une serrure à loquet, compléte. Le tout suivant l'emplacement et les indications des Architectes.

Les *sièges d'aisances* en menuiserie seront ferrés chacun, de deux pivots en cuivre, à tourillons, avec bourdonniéres, et d'un bouton également en cuivre. *Ferrure des Mangeoires.*—Les *mangeoires* seront supportées par des potences en fer de 0·034 millimètres de gros, élargies de 0·045 millimètres sur le devant, retournées d'équerre, entaillées sur la face des mangeoires, et fixées sur la dite face par des vis à tête fraisée. Aux dites mangeoires seront des tringles consolidées de colliers, et destinées à recevoir les longes. Le dessus sera garni en forte tôle de $0^{m}\cdot005$ millimètres d'épaisseur, fixée avec vis, et entaillée. Les *râteliers* seront, soit en bois, soit en fer, suivant l'indication des plans. S'ils sont en bois, ils seront garnis par des corbeaux et plates-bandes en fer, de $0^{m}\cdot011$ millimètres d'épaisseur, sur $0^{m}\cdot050$ millimètres de largeur. S'ils sont en fer, ils seront formés de tringles rondes de $0^{m}\cdot022^{mm}\cdot$, cintrées en quart de rond, assemblées haut et bas dans d'autres tringles de $0^{m}\cdot027$ millimètres de diamètre; celle du haut garnie de tirants; celle du bas garnie de scellements.

Observation générale.—Toutes les ferrures et fermetures pourront être modifiées par les Architectes, en raison de l'emplacement et de la destination des pièces.

Rez de Chaussée.—Outre les gargouilles en pierre décrite à la Maçonnerie, il pourra être fourni suivant les indications des plans, des *gargouilles en fonte* de seize centimètres de diamètre, destinées à conduire à l'extérieur les eaux ménagères, et en outre, soit des gargouilles, soit des tuyaux, destinés à écouler les eaux pluviales rassemblées sur les extrados des voûtes de caves placées sous les cours. Pour *les gargouilles*, soit en pierre, soit en fonte, il sera fourni des *plaques de fonte*, à cannelures ou à damiers, modelées au choix des Architectes. Les *cuvettes à syphon* sont à la charge de l'entrepreneur de Plomberie. Aux places indiquées par les plans, il sera fourni des *chasse-roues*, conformément aux détails des Architectes. Ils seront, soit en fer, composés chacun d'un montant et d'un arc de cercle en fer forgé, de cinq centimètres de diamètre, avec cubes pour recevoir les assemblages, et boules au-dessus, soit en fonte, modèle riche, au choix des Architectes; soit en fonte idem, en forme de boulets, fondus sur modèle. Les *scellements* seront faits en bitume, ou en plomb.

A chaque partie de vestibule, il sera fourni un *décrottoir* en fonte ornée. A chaque entrée des escaliers de service, il sera fourni un décrottoir en fer ordinaire. Dans les salons, salles d'attente, vestibules, et autres pièces principales, on placera des *pitons de lustres* de $0^{m}\cdot15$ centimètres à $0^{m}\cdot20$ centimètres de longueur taraudés, avec plates-bandes fixées sur les solives en fer. Les *grilles de ventouse*, les barres de languette et les plaques de fonte, seront fournies par le fumiste. Les *tuyaux de descente* des eaux pluviales et ménagères seront fournis par le Plombier.

L'escalier principal aura un *riche balustre en fonte*, orné, qui sera surmonté d'un candelabre en fonte ornée, pour l'éclairage au gaz, il sera claveté dans la première marche en pierre. La *rampe* sera en fer, de 22 millimètres, avec riches chapiteaux à boule, et riches pitons en fonte, à rosace, d'après le modèle choisi par les Architectes; les barreaux seront distants de quinze centimètres de milieu en milieu. Sous le limon et à chaque joint, il y aura des *plates-bandes* de 0^{m}·009 millimètres d'épaisseur, sur 0^{m}.04 centimètres de largeur, et 0^{m}·60 centimètres de longeur, entaillées et fixées avec vis. A chacun des dits joints, on fournira un *boulon d'assemblage*; à chaque étage on fournira au moins deux boulons d'écartement; ces boulons seront en fer, de 0^{m}·020 millimètres, avec platines en tôle pour recouvrir l'écrou. On fournira *des corbeaux* en nombre suffisant pour supporter les faux limons.

Pour *l'escalier secondaire*, les fournitures et travaux seront analogues a ceux décrits pour l'escalier principal; toutefois, le diamètre des barreaux sera réduit à 20 millimètres, et les modèles de balustres, pitons et chapiteaux, seront moins riches. Les *escaliers de service* auront chacun un *balustre en fonte unie*, surmontée d'une soie recevant la plate-bande en fer et la main courante. La *rampe* sera à barreaux en fer de 0^{m}·016 millimètres, espacés de quinze centimètres d'axe en axe; par le bas à col de cygne et à pointe dans le limon, avec petite rosace en cuivre; par le haut astragale en cuivre. On pourra placer des parties de rampes du côté des petites cours. *Plates-bandes*, boulons, &c., &c., comme ci-dessus, mais de dimensions moindres.

Ferrures, Fermetures, Fournitures pour les Travaux de Menuiserie et autres Menus Travaux.—Il n'y aura point de croisées proprement dites à cet étage, à moins qu'elles ne résultent des plans, et dans ce cas, les fournitures et travaux pour les croisées persiennes, et volets brisés et leurs balcons, seront analogues à ceux décrits au premier étage. Les *châssis soupiraux* verticaux ouvriront à soufflet et seront ferrés chacun selon qu'il suit. *Pattes et équerres.* Trois fortes *charnières en feuillures* à broches mobiles, ou des paumelles également posées en feuillures; un fort contre-poids, monté sur une longue tige ronde, fixé à pattes, au bas du châssis, pour le tenir fermé. Pour le tenir ouvert, un *tirage complet*, composé d'un piton de cordes, jeux de poulie en cuivre, et d'un arrêt scellé; un fort loqueteau pour fermeture. Pour éclairer les écuries, *châssis en fer*, ainsi composés: Un *châssis dormant* circulaire en fer, à feuillures interverties; un châssis ouvrant semblable, garni en outre d'un croisillon, et de feuillures pour recevoir le verre, fixé sur le dormant par deux tourillons. Fermeture, poulies et tirage complets. Les *trappes* pour jeter le bois seront en menuiserie et en fonte, suivant les distinctions établies aux plans. Les *trappes en menuiserie* seront ferrées chacune de deux fortes pentures à charnières, entaillées, renforcées au collet, et d'un fort anneau, également entaillé. Les *trappes en fonte* seront composées d'un fort châssis carré, évidé d'un trou circulaire, avec feuillure au pourtour, et d'un fort tampon circulaire, avec trou au centre pour le passage d'une clef. Le parement supérieur sera garni de pointes de diamant, destinées à assurer le pied des chevaux. Les *grands soupiraux* seront garnis extérieurement *de grilles horizontales*, qui seront exécutées d'après le détail des Architectes, tout en fer, composées d'un châssis en fer carré de 30 millimètres, de barreaux en fer mi-plat de 0m·020 millimètres sur 30, espacés entr'eux de trente millimètres.

Ferrure des Portes à 2 Ventaux, Vitrées ou Pleines—Les portes vitrées ou pleines, à deux ventaux, seront ferrées chacune de six paumelles à boules, de 0m· 21c· entaillées ; de deux verroux à ressort demi-placard, tige à baguette, avec platine et conduits en cuivre, et ornements ciselés ; modèles faits au choix des Architectes ; d'une serrure Sterlin (c'est le nom du fabriquant) dite sûreté, Bénarde, de 0m· 14 centim. avec gâche à baguette ; ou d'un bec de canne Sterlin de 0m· 14c. avec gâche à baguette en longeur ou en hauteur suivant l'emplacement ; dans les deux cas, un fort bouton double ou une forte béquille double, et une gâche avec mentonnet en cuivre. *Ferrures des Portes à 1 Ventail, Vitrées ou Pleines.*—Les portes à un ventail, vitrées ou pleines, seront ferrées de trois paumelles doubles, à boule, de 0m·19 centimètres, ou de trois fortes charnières en feuillure, de 0m· 11 centimètres, à broches mobiles et profilées ; en fin, d'une serrure compléte, ou d'un bec de canne complet, comme il a été dit ci-dessus. Dans les *portes d'entrée* à un ou deux ventaux, on fournira des serrures de sûreté Sterlin. A chacune de ces portes d'entrée, on fournira un bouton de tirage en cuivre, de 0m· 06 centimètres de diamètre, avec rosace en cuivre. Les *portes* à l'entrée des descentes de caves, seront *à un ou deux ventaux.* Les *portes à un ventail* seront *ferrées* de trois fortes paumelles doubles, à boule ; d'un très fort loqueteau de 50 centimètres de longueur, avec forte boucle en fer à l'extérieur et mentonnet, d'une forte serrure de sûreté à pêne dormant, avec clef Bénarde à gâche. Les portes à deux ventaux auront six paumelles au lieu de trois, et recevront en outre deux forts verroux à ressort. *Fort crochet* pour descendre le vin.

Ferrure des Portes-Cochères.—Chacune sera ferrée de deux très forts pivots à équerre, de chacun un mètre de branches, avec fortes crapaudines à mamelons, scellées en plomb ; de deux très fortes équerres doubles idem, portant paumelles avec très forts gonds à scellement ; de deux autres très fortes équerres doubles ; d'une espagnolette de toute la hauteur de la porte, en fer rond de 4 centimètres de diamètre, garnie de ces embases; d'une très forte poignée, et de tous ses accessoires; la partie du bas devra être mobile, et se lever comme un verrou; d'une serrure à Auberonière, formant la poignée de l'espagnolette; et enfin, pour le *guichet*, de trois fortes paumelles doubles de trente centimètres; de deux fortes équerres doubles; d'une serrure à pêne dormant de sûreté, avec pêne coulant, correspondant aux deux cordons qui seront établis dans la loge du concierge; et gâche à rouleau en cuivre; d'une fort paillette de renvoi; le seuil du dit *guichet* sera garni d'une forte tôle. *A l'extérieur* des dites portes, on placera sur chaque ventail un *bouton de tirage* en cuivre, avec rosace à cuvette de quinze centimètres de diamètre; et pour le guichet, une forte poignée en cuivre de vingt centimètres, montée sur platine aussi en cuivre. *A l'intérieur* des portes-*cochères*, sur le ventail opposé au guichet, on placera pour recevoir les journaux *une boîte* en forte tôle, avec porte idem, ferrée de deux charnières et d'une petite serrure. Cette boîte sera garnie sur la face extérieure de la porte d'une trappe mobile en cuivre, avec ressort de renvoi, pour empêcher la trappe de rester ouverte; sur la guichet plaque en cuivre, pour former symêtrie s'il y a lieu. On fournira pour les dites portes, soit des *battements en fonte* ornée, figurant une demi colonnette, avec base et chapiteau, soit des clous ou autres ornements en fonte, qui seront demandés par les Architectes. L'entrepreneur devra mettre des *panneaux en fonte*, ornés et à jour, d'un riche modèle, si les Architectes les préfèrent aux panneaux en bois. Pour l'ouverture de chacune des portes-cochères, il sera établi un tirage correspondant à la serrure de la dite porte; ce tirage, en fil de fer d'un fort numéro, sera placé dans des entailles faites dans la pierre, recouvertes par les plaques de tôle, et il sera garni de ressorts, bascules, mouvements, conduits, et autres accessoires, d'un fort modèle. Ce tirage sera manœuvré dans la loge par deux cordons placés: l'un près de la porte de la dite loge; et l'autre sur le mur derrière l'emplacement du lit.

Sonnettes.—A l'extérieur de chacune des portes-cochères, dans les tableaux, sera placé un fort tirage à cuvette, en cuivre, de seize centimètres correspondant par des fils de fer placés dans des entailles faites dans la pierre, avec la *sonnette* qui sera placée dans la loge du concierge. Ces fils de fer seront garnis de ressorts, mouvements, conduits, et autres accessoires nécessaires; les entailles des dits fils de fer seront recouvertes par des plaques en tôle, fixées avec des vis tamponnées. Ces *sonnettes* de portes-cochères sont les seules qui fassent partie du forfait: les autres font partie des travaux réservés.

La *ferrure des armoires*, à cet étage, sera conforme à celle décrite au premier étage. Les *fournitures* et travaux à faire pour les *sièges d'aisance* en menuiserie seront conformes à ceux décrits à l'étage souterrain. Les *devantures de boutiques* comprendront le rez de chaussée et l'entresol, et seront ferrées ainsi qu'il suit : Les poteaux, les traverses, les corniches, et les diverses autres parties des devantures seront fixées par de fortes pattes entaillées. Dans les châssis de montre, pour recevoir le verre, *montants en fer* à feuilleures et moulures, de 5 centimètres de profondeur, modèle au choix des Architectes. Ils seront fixés à pattes sur les châssis en menuiserie. Si la disposition des boulons de fermeture le nécessite, ils seront renforcés et mortaisés pour le passage des dits boulons.

Ferrure des Volets.—Les *volets* seront portatifs ou à charnières, suivant la distinction indiquée aux plans. Les *volets portatifs* seront ferrés chacun de deux poignées à charnière, deux pannetons avec leurs gâches, deux équerres en fer posées sur le champ, et aux angles inférieurs. enfin, des platines percées pour le passage des boulons. Les *volets à charnières* seront ferrés de fortes charnières, entaillées, à branches, et à nœuds coudés, et de platines percées pour le passage des boulons. Les *barres de fermeture* seront en fer de 10 millimètres sur 50, élargies aux extrêmités, et chanfreinées, avec boutons tournés, gâches, boulons et clavettes, &c. Supports à charnières fixés sur les volets. Les *couvre-caissons* seront ferrés de fortes charnières en feuillures et de serrures à loqueteau entaillées.

Les *portes à deux ventaux seront ferrées* chacune de six fortes paumelles doubles à boule, d'une serrure de sûreté de quinze centimètres avec gâche à baguettes, d'un bec de canne en long, Sterlin avec béquille double, ou bouton double en cuivre ciselé, et avec gâche à mentonnet en cuivre, et de deux verroux à ressort et demi, placard tige demi-ronde à baguette, avec conduits en cuivre, et boutons ainsi en cuivre, avec ornements ciselés, gâche à patte en cuivre pour le haut et gâche platine pour le bas. Equerres doubles.

Les *portes à un ventail* seront *ferrées* chacune de trois fortes paumelles doubles à boules ; d'une serrure de sûreté et d'un bec de canne comme ci-dessus. Equerres doubles. Les *châssis* d'imposte seront ferrés chacun ainsi qu'il suit : Quatre équerres, trois charnières en feuillures à broches profilées ; un loqueteau à pompe avec fil de tirage complet ; un ressort à paillette de renvoi. Un *croisillon* en fer, simple ou double, d'après le détail des Architectes.

La *cimaise au-dessus du soubassement* de la devanture *sera en tôle ou en cuivre*, au choix des Architectes ; elle portera ressauts suivant les pilastres et les caissons. Les *baies de soupiraux* dans le soubassement des devantures, seront garnies chacune de deux *châssis* en fer, savoir : Le premier châssis, dormant et posé à fleur du soubassement en marbre, sera en fer carré de deux centimètres et formera la feuillure du 2eme. châssis. Il sera garni de montants intermédiaires, traverses et diagonales en fer mi-plat de deux centimètres sur un centimètre, formant des croisillons à compartiments octogones, en losanges et en triangles ; à la rencontre des croisillons, on placera des rosaces en cuivre orné. A l'intérieur du dit châssis, sera un deuxième châssis, ouvrant, en fer, à feuillures, pour recevoir le verre et à moulures, ferré de charnières, poulies, conduits et tirages en corde à 7 fils pour opérer la fermeture et l'ouverture. Le tout conformément aux détails des Architectes.

Les *dévantures sur la cour* seront ainsi ferrées : *Pattes* pour fixer les poteaux, traverses, &c. *Montants en fer* à feuillures, comme ci-dessus. *Ferrures des volets* mobiles, savoir :—Pour chacun 2 poignées à charnière. 2 pannetons et leurs gâches. Un cours *de barres de fermeture*, en fer de 10 centimètres sur cinquante, élargies aux extrêmités, et chanfreinées, avec boutons tournés, gâches, boulons, clavettes, et entrées de boulons. Supports à charnières, fixés sur les volets.

Ferrures des portes à deux ventaux, savoir :—Quatre *équerres doubles*. Six *paumelles doubles* à T, de 18 centimètres entaillées à feuillures et à boules. Une *serrure de sûreté* de 15 centimètres, compléte. Une *bec de canne* en hauteur ; Sterlin, avec forte béquille, et fort bouton en cuivre et gâche à coq en cuivre, ou à rouleau. Deux *verroux à ressort*, complets. Ferrure des châssis d'imposte, savoir :—Quatre *équerres*. Trois *charnières* en feuillures à broches profilées. Un *loqueteau* à pompe, avec fil de tirage complet. Un *ressort* à paillette de renvoi. Un *croisillon en fer*, simple ou double, d'après le détail des Architectes.

Ferrure des châssis de soupiraux, comprenant comme ci-dessus. Charnières, poulies, conduits et tirage en corde septain, pour opérer la fermeture ou l'ouverture. *Grilles de soupiraux*, d'après le détail des Architectes, soit tout en fer, soit en fer avec panneaux en fonte, provenant du commerce. Les *devantures* de boutique, au fond des galeries, pourront être en fer, si cela résulte des indications des plans ; dans ce cas, les divers détails en seront exécutés ainsi qu'il suit :—Les *huisseries en fer* reposeront sur le socle en pierre, et seront fixées par le haut, sur la traverse d'enseigne ; leur force sera fixée par les Architectes, en raison du poids de la porte qu'elles seront destinées à recevoir. *Pour les montres, encadrements* en fer à feuillures simples, reposant sur un soubassement en menuiserie, et s'élevant jusqu'à la traverse d'enseigne. S'il y a lieu, montants intermédiaires en fer à double feuillure. Ces huisseries, montants et traverses, auront *les parements* parfaitement dressés. Soubassements en menuiserie, et cimaise en cuivre, comme il a été dit ci-dessus. *Châssis de soupiraux* en fer, comme il a été dit ci-dessus.

Portes à un ou deux ventaux, suivant la distinction établie aux plans. Les dites en fer à feuillures d'une force qui sera fixée par les Architectes, en raison des glaces qu'elles sont destinées à recevoir. Les *parements* parfaitement dressés, comme ceux des huisseries. Le *bas* garni de croisillons pour recevoir les panneaux en marbre. Cimaise en cuivre, contenant celles des soubassements. *Ferrure* complète, analogue à celle décrite pour les portes en menuiserie.

Châssis d'Imposte.— Dans les impostes, châssis ouvrants, à soufflet, en fer, à feuillures, pour recevoir le verre double, ferrés comme ceux en menuiserie. Croisillons doubles. *Frises, corniches, et volets* en menuiserie ainsi que les caissons et couvre-caissons.

L'entrepreneur de Serrurerie fera tous les *scellements* des objets qui demandent une grande solidité, tels que crapaudines de porte-cochère, décrottoirs, chasse-roues, fortes gâches &c., soit en plomb avec grenailles, soit en bitume, soit en ciment Romain, conformément aux détails des Architectes. Les *scellements au soufre sont interdits.*

Observation générale.—Pour tous ces objets de serrurerie, on se conformera aux détails et aux ordres des Architectes. L'étude pourra faire varier quelques uns des articles spécifiés dans ce devis, mais on s'attachera à ce qu'il y ait, autant que possible, compensation entre les augmentations et les réductions. Tous les *objets de quincaillerie* sortiront de la fabrique Bricard et Gauthier ancienne maison Sterlin; toutefois les Architectes pourront admettre d'autres ferrures équivalentes, si les modèles leur sont présentés d'avance, et qu'ils les jugent convenables et comparables à ceux de la maison Sterlin. L'entrepreneur fera les fournitures et tous les travaux nécessaires à la complète exécution du projet, même ceux qu'on aurait omis de spécifier dans le présent devis. Ces observations s'appliquent également aux autres étages du bâtiment, et ne seront point répétées.

Entresol et Premier Etage.— Les travaux et fournitures seront analogues à ceux ci-dessus décrits pour le rez de chaussée, en ce qui concerne: les pitons de lustre, l'escalier principal, l'escalier secondaire, et l'escalier de service, dans leurs rampes, plates-bandes, boulons, &c.

Fournitures pour les Travaux de Fumisterie.—Les *grilles de* *ventouses*, les barres de languettes et les plaques de fonte, seront fournies par le fumiste. Dans les cuisines, le Serrurier fournira un *manteau en fer* carré de 20 millimètres, avec carillon à scellement et à crochet pour le maintenir. Des *plates-bandes* de fer de sept millimètres sur 40, contournées en consoles. Pour le fourneau potager, *deux fortes ceintures* en fer de 0^{m}·007 millimètres sur 50, et une en fer carré de 27 millimètres. Enfin le *carillon* nécessaire pour le hourdis des paillasses et de la hotte. Les *réchauds du fourneau*, leur couvercle et les portes, seront fournis par le Fumiste. Les fournitures pour les *poëles* seront entièrement à la charge de l'entrepreneur de Fumisterie.

Ferrures, Fermetures, Fournitures pour la Menuiserie, et autres Menus Travaux.—Les *croisées*, qui pourront être avec impostes, seront ferrées de 8 fiches de 0^{m}·11$^{c.}$ de quatre équerres doubles, de huit pattes entaillées et à scellement, de crémones avec boîte en fonte ornée, bouton à olive en cuivre ciselé, système Charbonnier, Garnier, Morel, ou équivalent, au choix des Architectes, avec gaches haut et bas ; petite bascule, dans le haut, pour faire revenir la croisée, agraffes pour les volets et tous autres accessoires. Ces *crémones* seront d'un modèle riche, au choix des Architectes, et d'une force proportionnée à la hauteur de la croisée. Les *impostes* au-dessus des croisées et des portes, s'il y a lieu, seront dormants ou ouvriront à feuillures, si les Architectes l'exigent, et dans ce cas seront ferrées de quatre fiches à broches profilées, de deux loqueteaux avec mentonnets, fils de tirage et anneaux. Aux *portes croisées*, on placera en outre un bec de canne en hauteur, ou toute autre disposition analogue, au choix des Architectes.

Les *fenêtres* sur les rues et places seront garnies de *volets intérieurs* qui seront ferrés de 12 charnières, ou un plus grand nombre, selon la quantité des feuilles ; pannetons et contre-pannetons, deux petits becs de canne, pour fixer les volets dans leur caissons. Il n'y aura pas de volets sur la cour. Les fenêtres sur les rues et places, et sur la cour, seront garnies de *persiennes*, qui seront à deux ventaux ordinaires ou brisés, suivant l'emplacement ; celles à deux ventaux seront ferrées ainsi qu'il suit. Deux équerres doubles pour chaque feuille ; six paumelles à T, de 0$^{m.}$ 19 centimètres, avec gonds à scellements ou à pointe, un loqueteau à pompe, avec tirage en fil de fer cordelé, anneau étamé, et mentonnet à pointe, une poignée à fléau de 0$^{m.}$ 19 centimètres sur platine, une poignée de tirage à patte de 0$^{m.}$ 13 centimètres, deux battements haut et bas aux arrêts avec broches et chaînettes. Celles brisées, seront ferrées, ainsi qu'il suit. Pour chaque feuille, deux équerres doubles ; pour chaque brisure, trois charnières de 0^{m}·11$^{c.}$ à nœuds coudés ; pour la fermeture des feuilles brisées, des crochets plats de $0^{m}\cdot09^{c\cdot}$ sur platines entaillées, avec pitons carrés sur platines idem. Le reste de la ferrure comme celle des persiennes à deux ventaux. Dans le cas où les Architectes le demanderaient, le loqueteau et ses accessoires seraient remplacés par la fermeture système Cadine (c'est le nom de l'inventeur); c'est à dire par une tringle en fer rond, avec double loqueteau, une poignée à bascule et mentonnet.

Les *croisées sur les petites cours* seront *ferrées* de six pattes, huit équerres, six fiches, et une petite crémone complète. Les *châssis vitrés intérieurs* seront ferrés de charnières en feuillures, de verroux, placards, et d'équerres simples. Au-dessous des courcelles, dans les *châssis de menuiserie*, on établira, s'il y a lieu, des châssis vitrés composés de traverses en fer à moulures, avec doubles châssis formant feuillures; ces châssis ouvrants seront ferrés de charnières avec poulies, conduits et tirage en corde septain pour l'ouverture et fermeture des dits châssis.

Sur les rues et places, *le grand balcon* extérieur se composera de bâtis en fer carré, formant de grands et de petits compartiments. Les grands compartiments garnis de barreaux en fer rond, assemblés haut et bas dans les traverses, et ornés de chapiteaux et bases. Les petits compartiments garnis de cercles en losanges en fer miplat, la traverse du haut surmontée d'une main courante en fer, profilée. Le tout semblable, comme disposition et force des fers, aux balcons du Ministère des Finances.

Au droit des murs mitoyens, on fournira des *grilles scellées* avec défenses, chardons, &c., conformes à celles existantes Rue de Rivoli. Il sera fourni pour les croisées, sur les cours, *des balcons*, soit en fonte modèle simple, au choix des Architectes, soit en fer avec panneaux en fonte, conformément aux détails qui en seront donnés. Les *croisées* sur les petites cours seront garnies *de barres d'appui* en fer rond, de 27 millimètres. A l'intérieur des bâtiments les châssis vitrés seront défendus par des *barreaux en fer* partout où ce sera nécessaire pour la sûreté. Ces barreaux pourront être remplacés partout où les Architectes le jugeront nécessaire par des *croisillons en fer*, avec patères en cuivre. Sur les petites cours les châssis en menuiserie pourront être garnis de *montants en fer*, à feuillures et à moulures, espacés de quinze centimètres d'axe en axe, et formant à la fois châssis vitré et grillé de sûreté.

Les *portes à deux ventaux* seront ferrées chacune de six *charnières* en feuillures de $0^{m}\cdot$ 11 centimètres, à broches mobiles et profilées, de deux verroux à ressort à tige demi-ronde, avec platines et conduits en cuivre, à moulures, et boutons ornés en cuivre, avec ornements ciselés ; modèles forts au choix des Architectes. D'une *serrure Sterlin,* dite de sûreté Bénarde de $0^{m}{\cdot}04$ centimètres avec fort bouton double, et forte béquille, et avec gâche à baguette. Toutes les portes contigues à des salons, des salles à manger, ou de grandes chambres à coucher, seront disposées pour être enlevées facilement ; à cet effet, elles recevront, au lieu des charnières indiquées ci-dessus, des paumelles à **T** double de $0^{m}{\cdot}04$ centimètres de branches, entaillées en feuillures, avec nœuds à boules.

Ferrure des Portes à un Ventail.—Les *portes à un ventail* seront ferrées de trois fortes charnières en feuillures de $0^{m}{\cdot}11$ centimètres, à broches mobiles et profilées, enfin d'une serrure complète, comme il a été dit ci-dessus. Pour les portes d'entrée à un ou deux ventaux, on fournira des *serrures de sûreté* Sterlin, garnies de deux clefs forées. Lorsque, pour les besoins du commerce, les Architectes le demanderont, ces serrures seront en outre garnies d'un bouton double en cuivre, pour ouvrir le demi-tour. A chacune de ces portes d'entrée, on fournira deux *boutons* de tirage en cuivre de $0^{m}{\cdot}054$ millimètres avec rosaces. *Toutes les serrures,* soit de vraie sûreté, soit de sûreté Bénarde, seront munies de rouets et autres garnitures de sûreté, sur des modèles assez variés, pour éviter qu'une même clef ouvre plusieurs serrures.

Aux portes intérieures des simples cabinets, les serrures pourront être remplacées par des *becs de canne* Sterlin de 11 centimètres en largeur et en hauteur suivant l'emplacement, et à verrou de nuit. Les *boutons doubles* de toutes les portes seront en cuivre, hexagones ornés, ou autres équivalents, modèle au choix des Architectes. Dans les pièces indiquées par les Architectes les boutons en cuivre seront remplacés par des boutons de cristal de $0^{m}{\cdot}06$ centimètres, d'un modèle riche et de leur choix. Il sera placé des béquilles ornées, et des boucles à Gibecière, partout où les Architectes le demanderont. Toutes les portes des chambres à coucher auront en outre des *targettes* en fer poli en cuivre, avec gâche idem, modèle au choix des Architectes. Les portes donnant sur les couloirs et les antichambres, seront garnies d'une seule targette, placée à l'intérieur ; celles communiquant aux deux chambres à coucher, seront garnies de deux targettes. Les portes des cabinets d'aisance seront également garnies d'une targette. Il y aura au moins 4 *pattes à chambranles,* dans la hauteur des portes, et pour chaque chambranle ou contre-chambranle.

Les *placards d armoires* seront ferrés de *charnières,* de verroux, placards, et de serrures d'armoires à pêne fourchu et complet. Les abattants des *lieux d'aisance* seront ferrés de forts pivots en cuivre et boutons idem. Les abattants des *boites à linge* placées auprès, seront ferrés de deux charnières en cuivre et d'un bouton idem. Bouton en cuivre pour les autres *tiroirs*, s'il y a lieu. Ils pourront être remplacés par des boutons, soit en acajou, soit en chêne poli. Toutes les entailles des diverses ferrures seront faites avec le plus grand soin. On se conformera aux observations générales consignées à la fin de la description du rez de chaussée (même catégorie).

Deuxième, Troisième, et Quatrième Etages.—Les deuxième, troisième et quatrième étages au-dessus de l'entresol, sont absolument conformes, pour les travaux de Serrurerie, à la description de ces travaux, faite pour le premier étage, sauf les exceptions ci-après. Au deuxième étage, chacune des croisées sur la Rue de Rivoli et sur les places, sera garnie d'un *balcon*, soit en fonte modèle riche, au choix des Architectes, soit en fer, avec panneaux en fonte fondus sur modèle, conformément aux détails qui seront donnés. Le troisième et le quatrième étages, sur la même rue et sur les places, seront garnis de *balcons* semblables, pour la forme et la force des fers, à ceux existants au Ministère des Finances. Il y aura des chardons pour séparer les appartements et les maisons. Le *grand escalier* s'arrêtera au quatrième étage, l'escalier secondaire continuera jusqu'au cinquième étage. Les escaliers de service continueront de même.

CINQUIÈME ÉTAGE AU-DESSUS DE L'ENTRESOL—COMBLES.

Observation générale.—Pour cet étage, les travaux de Serrurerie seront analogues à ceux décrits au premier étage, sauf les différences résultant des plans, et les dispositions suivantes : Les fournitures des *tuyaux de descente* des eaux pluviales et ménagères, font partie de la Plomberie. Les tranchées aux droit des croisées verticales destinées à éclairer le cinquième étage seront garnies chacune en trois sens, d'un *balcon* analogue à celui décrit au premier étage, mais plus simple. Au-dessus des lucarnes du quatrième étage seront placées des *défenses en fer*, garnies de herses et de chardons, et analogues à celles existantes Rue de Rivoli.

Observation générale.—Cet étage comprendra les chambres de domestiques, et en outre, des pièces plus importantes destinées a être louées et dont le nombre résulte des plans. Les portes des chambres domestiques seront ferrées de trois *charnières à broche* de $0^{m.}\ 11^{c.}$ et d'une serrure tour ½ Sterlin à bouton de coulisse, et avec gâche, suivant la place. Celles des cabinets d'aisances communes seront ferrées de trois *paumelles doubles* de $0^{m.}\ 19^{c.}$ d'une serrure tour et demi, avec bouton de coulisse et plusieurs clefs ; d'une forte targette avec gâche à l'intérieur. Les portes des chambres de maîtres seront ferrées d'une manière analogue à ce qui a été dit au premier étage, sauf les dimensions et simplifications. On se conformera aux observations générales consignées à la fin de la description du rez de chaussée.

FERRONNERIE, ET AUTRES TRAVAUX DE SERRURERIE NÉCESSAIRES À LA GROSSE CONSTRUCTION DU BÂTIMENT ET SA COUVERTURE.

Etage Souterrain.—Tous les clous, rappointis, chevillettis *et autres fournitures* nécessaires pour la maçonnerie, seront fournis par le Serrurier. Des *colonnes en fonte* seront placées dans les endroits indiqués sur les plans. Les *fermes ou poitrails*, destinés a porter des parties de planchers, seront en fers à double ou triple T, simples ou accouplés au moyen d'entretoises, et de dimensions en rapport avec les charges à supporter. L'étage souterrain sera surmonté d'un *plancher en fer* dans toute la partie des bâtiments indiquée sur les plans. Ce plancher sera composé de *solives* en fer à double T, espacées de $0^{\text{m.}}$ $70^{\text{c.}}$ au plus, d'axe en axe. Leur force sera proportionnée aux portées, savoir :—

Portées de $1^{\text{m.}}$ à $3^{\text{m}}{\cdot}60$, hauteur 12c. pesant 11k. le mètre.
Portées de $3^{\text{m}}{\cdot}60$ à $4^{\text{m}}{\cdot}50$, hauteur 14c. pesant 14k. le mètre.
Portées de $4^{\text{m}}{\cdot}50$ à $5^{\text{m}}{\cdot}30$, hauteur 16c. pesant 16k. le mètre.
Portées de $5^{\text{m}}{\cdot}30$ à $6^{\text{m}}{\cdot}00$, hauteur 18c. pesant 20k. le mètre.
Portées de $6^{\text{m}}{\cdot}00$ à $7^{\text{m}}{\cdot}00$, hauteur 22c. pesant 26k. le mètre.

Au-dessus de 7 mètres mêmes dimensions, mais les solives rapprochées à cinquante centimètres d'axe en axe. Elles seront cintrées sur leur longueur de trois à cinq centimètres environ. On devra *disposer les solives* de manière, qu'il s'en trouve toujours une sous chacune des cloisons de distribution parallèle à leur direction, et dans ce cas, la solive à ajouter sera plus forte que les autres, en raison de l'excédant de poids qu'elle aura à supporter. Ces solives seront entretoisées, soit par des fers carrés de dix-huit millimètres, agraffés sur les solives, soit par des fers ronds de vingt millimètres de diamètre, taraudés et fixés au moyen d'écrous. Ces entretoises seront espacées de quatre-vingt-dix centimètres au plus, et sur les entretoises seront posés *des fentons de remplissage* en fer carré de onze millimètres, espacés de 20 à 25 centimètres. Toutes les portées auront de vingt à vingt-cinq centimètres. Pour la disposition du plancher, on se conformera aux détails des Architectes.

Solives faisants jonction de Chevêtres.—S'il est nécessaire de réserver des ouvertures dans les planchers, soit pour les escaliers, soit pour les soupiraux, on emploiera des *chevêtres en fer*, à double

T, dont les dimensions seront calculées en raison du poids à supporter. Les *assemblages* entre les solives et les fermes poitrails ou chevêtres, seront faits au moyen d'équerres doubles, boulonnées, et même d'étriers, le tout conformément aux instructions des Architectes. Au-dessus des piles isolées, il sera placé des *solives accouplées*, formant moises, boulonnées et cintrées plein ; elles ont pour objet de maintenir solidement la *tête des piles*. Ces têtes seront également maintenues dans le sens perpendiculaire, par des entretoises, des solives, des chaînes, ou toute autre disposition qui sera indiquée par les Architectes. Pour les tuyaux adossés, il sera fourni *des ceintures en fer* doux, de onze millimètres sur 30, un par étage. Il sera également fourni des ceintures plus fortes pour les tuyaux qui pourront être suspendus, soit aux voûtes, soit aux planchers. Il sera fourni *les pattes* nécessaires au scellement des dalles, des cloisons, &c., &c. Les *tuyaux de chûte* seront en fonte, de vingt-deux centimètres de diamètre intérieur, et seront continués ainsi jusqu'au dernier étage, avec culottes d'embranchement au droit de chaque siège d'aisance. Ils seront *continués en poterie*, dans la hauteur du cinquième étage ; jusqu'au dessus des combles. Les ceintures seront analogues, à celles décrites ci-dessus, pour les tuyaux adossés.

Rez de Chaussée.—Les travaux et fournitures sont *analogues* à ceux décrits ci-dessus pour l'étage souterrain en ce qui concerne.

Les *colonnes de fonte* monteront dans la hauteur du rez de chaussée, et dans celle de l'entresol. Elles seront fondues sur modèle, d'après les détails des Architectes, avec un diamètre réduit de vingt centimètres, et porteront un chapeau, des consoles, pour recevoir les solives, et d'autres dispositions pour se relier avec les pièces principales du plancher, en deux sens, afin d'être fixées invariablement. Enfin, elles seront placées avec semelles et coins. Au-dessus des *piles isolées* et *des colonnes de fonte*, il sera placé des *solives accouplées*, formant moises, boulonnées et cintrées plein. Elles ont pour objet de maintenir solidement la tête des piles et des colonnes. Ces têtes seront également maintenues dans le sens perpendiculaire par des entretoises, des solives, des chaînes, ou toute autre disposition qui sera indiqué par les Architectes.

Chaînage.—A la hauteur du plancher haut du rez de chaussée, les divers bâtiments seront chaînés au droit des murs de face, des murs de refend, des murs mitoyens, et partout où les Architectes le jugeront nécessaire ; ils seront également chaînés en diagonale, se croisant vers le centre des travées, le tout conformément aux détails qui en seront donnés. Ce chaînage sera exécuté. 1°. Au moyen de poitrails en fer, qui seront à cet effet armés à leurs extrémités de harpons avec ancres. 2°. Au moyen de celles des solives en fer qui se trouveront dans la direction du chaînage, lesquelles seront également armées de harpons avec ancres. 3°. Au moyen de chaînes en fer, de neuf millimètres sur quarante, portant à leur extrémité des ancres de trente-cinq millimètres carrés, et de 70 centimètres de longueur.

Dans les petits cours, à la hauteur du plancher haut du rez de chaussée, il sera placé un *châssis en fer*, à deux ou quatre pentes. Ces châssis seront portés sur des supports coudés, formant chaîneaux au pourtour. Les châssis vîtrés seront recouverts de châssis grillagés, portés sur fourchettes, et se levant en plusieurs panneaux pour faciliter le nettoyage des carreaux.

ENTRESOL ET PREMIER ÉTAGE.

Les travaux et fournitures seront analogues à ceux ci-dessus décrits pour l'étage souterrain.

Les *deuxième, troisième et quatrième étages au-dessus de l'entresol*, sont absolument conformes, pour les travaux de Serrurerie, à la description de ces travaux, faite pour le premier étage, sauf les exceptions ci-après. Les *terrasses* sur la Rue St. Honoré et sur les autres rues, sont composées d'un *double plancher en fer*, de construction analogue à ceux ci-dessus décrits. Pour les *murs en retraite* à faire sur les mêmes rues, on fournira tous les fers indiqués sur les détails qui seront donnés par les Architectes, et spécialement deux grandes moises en fer à double **T**, portant sur les murs de refend et mitoyens, et boulonnées entre elles haut et bas.

Cinquième Étage au-dessus de l'Entresol et Combles.—Pour cet étage la Ferronnerie et les travaux de Serrurerie seront analogues à ceux décrits au premier étage, sauf les différences résultant des plans et les dispositions suivantes. Le *double plancher* des latrines communes sera en fer, composé de barres de fer de 27 millimètres et de fentons. L'entrepreneur fournira dans les combles régnant dans la hauteur du 4^e et du 5^e étage et décrits dans la Maçonnerie, la Charpente, la Couverture et la Plomberie: des fers à double **T** pour servir de pannes, toutes les fois que les pannes en bois ne pourront pas être éloignées convenablement des tuyaux de cheminée; approximativement, le nombre de ces solives en fer sera le tiers du nombre total des pannes: s'il est supérieur, il sera fait compte; tous les gros fers nécessaires à la construction du comble, tels que les étriers, les harpons avec ancres, les plates-bandes, les équerres, les chevêtres, les boulons, &c. Enfin, tous les objets que l'usage met ordinairement à la charge des entrepreneurs de Serrurerie.

Le *plancher* haut du cinquième étage ou faux plancher, sera en fer à double T, et analogue à ceux décrits ci-dessus, à l'exception que la force des solives sera moindre d'un tiers, en raison de la destination de ce plancher, qui ne doit porter aucune charge. Pour le *comble*, fourniture de *crochets de service* renforcés. Tous les *châssis à tabatière* seront en fer à canaux, dimension et modèle au choix des Architectes, avec ferrures et crémaillères. Ceux éclairant les couloirs auront un arc-boutant, un système de poulies, conduits et tirage en corde septain pour les manœuvres. A ceux servant de sortíe pour le service des combles, l'arc boutant sera rendu mobile, au moyen d'une disposition particulière qui sera indiquée par les Architectes ; on ajoutera en outre un arc de cercle pour les tenir ouverts. Au-dessus de chacune des petites cours on placera un *châssis de fer*, formé de montants à feuillures, laminés, espacés de 40 centimètres, et de sablières hautes et basses, en fer de champ, portant sur des fourchettes à pattes, élevées à 30 centimètres au-dessus de la couverture, afin d'aérer les dites cours. Le châssis débordera le vide des cours de 40 centimètres sur tous sens, afin d'empêcher la pluie de pénétrer. On percera les trous nécessaires à la pose des traverses en zinc qui seront fournies et posées par le vitrier.

Observation générale.—On se conformera aux observations générales consignées à la fin de la description du rez de chaussée.

MARBRERIE, STUC, SCULPTURE, MIROITERIE.

Rez de Chaussée.—Marbrerie et Stuc.—Les *devantures de boutiques* auront les soubassements revêtus de tranches de *marbre noir de Dinan.* Le developpement de ces revêtements sera celui des devantures, leur hauteur de cinquante à soixante-dix centimètres, suivant les pentes ; leur épaisseur de vingt-deux millimètres. Ces revêtements régneront également *sur les portes.* Le *vestibule principal* sera carrelé en carreaux carrés de marbre blanc et de marbre noir, avec bandes d'encadrement en marbre. Les *vestibules secondaires*, indiqués au plan, seront carrelés en carreaux de liais octogones, et petits carreaux de marbre noir.

La *cheminée* de la loge du concierge aura un mètre dix centimètres de largeur, mesure prise à la traverse, et sera en marbre petit antique, ou équivalent, chambranle à la capucine avec foyer en marbre idem. Les *autres cheminées* seront établies conformément aux indications du plan, et dans les meilleures conditions, sous le rapport du choix du marbre, de l'exécution et de la pose.

Entresol et Quatre Etages principaux.—Les *cheminées des grands* *salons* auront un mètre quarante centimètres de largeur, mesure prise à la traverse, sur un mètre cinq centimètres de hauteur, et seront en marbre blanc avec volutes, griffes, cannelures, retours, arrière-corps, tablette double de riche profil, et foyer à compartiment. Les *cheminées* des petits salons auront un mètre vingt centimètres de largeur, sur un mètre de hauteur, et seront en marbre d'Italie ou équivalent, au choix des Architectes, à l'exception des marbres portor, griotte, ou vert de mer, qui ne pourront être exigés. Ils seront avec consoles simples, retours arrière corps, tablette simple profilée, et foyer à compartiments. Les *cheminées* des grandes chambres à coucher, indiquées comme telles au plan, seront semblables à celles des petits salons. Les *cheminées* des chambres moyennes auront un mètre dix centimètres de largeur, et seront en marbres d'Italie, ou équivalents, comme ci-dessus. Elles seront à modillons, avec retours, arrière corps, tablette simple profilée, et foyer simple. Les *cheminées* des petites chambres auront un mètre de largeur, et seront en marbre de Flandre, ou équivalent leur façon sera semblable aux cheminées des chambres moyennes.

Observation générale sur les Chambranles de Cheminées des salons et des grandes chambres à coucher. Ils seront faits exprès, d'après les indications des Architectes, et d'après leurs détails, s'il y à lieu. La mise en œuvre de tous les chambranles sera conforme aux meilleures régles de l'art ; les *moulures* et les *sculptures* seront faites avec le plus grand soin, le poli sera parfaitement fini, les revêtissements auront au moins quatorze millimètres d'épaisseur ; les chambranles seront parfaitement doublés ; enfin ils seront posés avec soin.

Les *tablettes de poêles* et leurs foyers, sont à la charge de l'entrepreneur de Fumisterie.

Stucs.—Les *murs* de l'escalier principal seront *revêtus de stuc*, dans tout leur développement, depuis et y compris le vestibule du rez de chaussée, jusques et y compris le 4$^{e.}$ étage au dessus de l'entresol. La hauteur de ce stuc régnera du dessus de la cimaise, jusqu' au-dessous des plafonds rampants ou horizontaux. Le stuc sera de première qualité et de deux tons, formant des encadrements et de grands panneaux. Les *veines* seront faites à la brosse. Il sera parfaitement *poli et verni*, ou encaustiqué.

5$^{eme.}$ *Etage au-dessus de l'Entresol.*—Les *cheminées* des chambres de maître, indiquées comme telles au plan, seront semblables à celles décrites ci-dessus pour les petites chambres à coucher, et en marbre de Flandre. Les *cheminées* des chambres de domestiques seront de même largeur et de même marbre, mais elles seront de forme capucine, et sans foyer.

SCULPTURE ET ORNEMENTS EN CARTON PIERRE.

Rez de Chaussée.—Si la porte-cochère a son entrée sur une rue sans galerie, le *chambranle* en pierre dure de la porte-cochère, son archivolte, les deux tympans au-dessus, les consoles et la clef, seront *ornées de sculptures.* La *porte-cochère* en bois de chêne, recevra quelques ornements sculptés, tels que chapiteaux, feuillages, &c., conformément au dessin. Les murs de *passage de porte-cochère* exécutés partie en pierre dure, partie en pierre tendre conformément aux distinctions qui ont été établies en leur lieu, recevront quelques ornements sculptés, indiqués sur la coupe. La *borne-fontaine* placée dans la cour exécutée en pierre de liais, recevra également quelques ornements simples.

Entresol et Quatre Étages principaux.—Les *façades* sur la Rue de Rivoli, et celles de même ordonnance, ne recevront aucunes sculptures. Les façades sur les autres rues recevront des sculptures simples, indiquées sur les dessins des élévations. Les principales parties destinées à recevoir de la *sculpture,* sont :—Les *consoles* en pierre dure, portant les balcons.—Les consoles et les frises, en pierre tendre, couronnant les baies de croisées.—Les consoles et la frise de l'entablement. Les diverses pièces seront décorées *d'ornements en carton-pâte* dont la quantité et la richesse seront proportionnées à l'importance des pièces, savoir :—*Dans les Grands Salons,* au pourtour de la corniche, deux cours d'ornements. En avant de la dite, un troisième cours d'ornements. Dans la gorge de la dite huit cartouches d'angles et de milieu, de chacune environ un mètre 40 centimètres de développement. Une rosace, d'un mètre quarante centimètres de diamètre. Le tout très riche.

Dans les Petits Salons.—Au pourtour de la corniche, un cours d'ornements. En avant de la dite, un deuxième cours d'ornements. Dans la gorge de la dite, huit *cartouches* d'angles et de milieu, de chacune environ un mètre de développement. Une *rosace* d'un mètre dix centimètres de diamètre, Le tout riche.

Dan les Grandes Chambres à coucher. — En avant de la corniche, un cours d'ornements. Dans la gorge de la dite, quatre cartouches d'angles, de chacune environ un mètre de développement. Une rosace d'un mètre dix centimètres de diamètre. Le tout simple.

Dans les Chambres moyennes.—Dans la gorge, quatre petits cartouches d'angles. Une rosace de quatre-vingts centimètres de diamètre. Le tout très simple. Rien dans les *petites chambres.* Dans les salles à manger, l'importance des ornements sera la même que dans les grandes chambres à coucher. Toutefois les motifs devront en différer, et rappeler la destination de la pièce. Dans les *antichambres*, une rosace de 80 centimètres de diamètre. Le *plafond de l'escalier* principal, sera orné d'une rosace riche, d'un mètre vingt centimètres de diamètre. Celui de *l'escalier secondaire* sera orné d'une rosace plus simple, de quatre-vingts centimètres de diamètre.

Observation générale.—Pour toutes les sculptures sur pierre et sur bois l'entrepreneur devra faire un modèle, qu'il soumettra aux Architectes, et qu'il modifiera, s'il y a lieu, d'après leurs instructions. Toutes ces sculptures seront exécutées par des mains habiles, et avec la plus grande pureté. Les ornements en pâte devront être choisis dans le commerce, parmi ceux du meilleur gout. Toutefois, en cas d'insuffisance, les Architectes pourront exiger qu'il soit fait des *modèles* pour les ornements des grands salons. Les *pâtes seront posées avec soin*, au moyen de clous galvinisés ; elles seront convenablement réparées et rebouchées.

MIROITERIE.

Glaces étamées.—Toutes les glaces seront exécutées conformément au tracé qui en sera fait sur place, par les soins de l'entrepreneur de Miroiterie, et d'après les instructions des Architectes. Elles seront d'un seul volume, parfaitement carrées, disposées pour être recouvertes par les bordures d'un à deux centimètres. Leur qualité sera celle qui est cotée à quatorze pour cent de rabais, sur la facture produite par la manufacture des glaces, et de premier choix dans cette qualité, indépendamment des autres rabais à obtenir. L'entrepreneur devra représenter cette facture s'il en est requis par les Architectes. Le nombre et les dimensions des glaces sont fixés ci-après approximativement, sauf les modifications que les Architectes jugeront àpropos d'y apporter au moment de l'exécution. Au *rez de chaussée,* une seule glace, qui sera placée dans la loge du concierge, et qui aura un mètre quarante centimètres de haut, sur quatre-vingt-dix centimètres de largeur. (Ces mesures et les suivantes, sont prises entre bordures). A *l'entresol,* et aux quatre étages principaux au-dessus de l'entresol, on placera deux glaces dans chacun des grands salons, et une seule glace dans chacune des chambres à coucher. Les dimensions des glaces seront en rapport avec la hauteur des étages, et l'importance des pièces. Etages de deux mètres soixante-dix centimètres de hauteur entre planchers. *Grands salons :* un mètre trente-huit centimètres, sur un mètre huit centimètres. *Grandes chambres :* un mètre trente huit centimètres, sur quatre-vingt-dix-neuf centimètres. *Petites* *chambres :* un mètre huit centimètres sur quatre-vingt-un centimètres. Etages de deux mètres quatre-vingt-dix centimètres de hauteur :—*Grands salons :* un mètre cinquante-neuf centimètres, sur un mètre quatorze centimètres. *Grandes chambres :* un mètre cinquante centimètres sur quatre-vingt-dix-neuf centimètres. *Petites chambres :* un mètre onze centimètres sur quatre vingt-un centimètres. Etages de trois mètres vingt centimètres de hauteur. *Grands salons :* un mètre soixante-huit centimètres, sur un mètre quatorze centimètres. *Grandes chambres:* un mètre soixante-cinq centimètres, sur quatre-vingt-dix-neuf centimètres. *Petites chambres :* un mètre cinquante-six centimètres, sur quatre-vingt-un centimètres. Etages de trois mètres trente centimètres de hauteur :—*Grands salons :* un mètre soixante-onze centimètres, sur un mètre quatorze centimètres. *Grandes chambres :* un mètre soixante-onze centimètres, sur quatre-vingt-dix-neuf centimètres. *Petites chambres :* un mètre soixante-deux centimètres, sur quatre-vingt-un centimètres. Les glaces des étages de hauteur intermédiaire seront établies en proportion, ainsi que celles des petits salons, et des chambres moyennes. Au *cinquième étage,* il sera placé dans chaque chambre de maître, aux endroits indiqués aux plans, une glace d'un mètre dix centimètres de haut, sur quatre-vingt-un centimètres de largeur.

Parquets.—Toutes les glaces seront établies sur parquets en bois de sapin parfaitement sec, composés de bâtis extérieurs, de vingt-sept millimètres, bâtis intérieurs de treize millimètres, et panneaux de sept millimètres. Ces parquets seront disposés de manière à produire des répétitions symétriques, et garnis de flanelle pour recevoir les glaces.

Bordures.—Toutes les glaces seront encadrées par des bordures conformes à la description ci-après, sauf les modifications que les Architectes jugeront à propos d'y apporter au moment de l'exécution, mais dans des prix équivalents. Au rez de chaussée, pour la loge du concierge : bordure modèle A. (Les lettres désignent des modèles choisis d'avance.) Profil : onze centimètres de largeur. Principaux ornements : une petite torsade. Guirlande de fleurs aux angles. Un petit talon rocaille : parties brunies : plastrons sur le grand talon ; entre les angles une petite baguette. A l'entresol, et aux quatre principaux étages au-dessus de l'entresol, les dimensions et les richesses des cadres seront en rapport avec la hauteur des étages et l'importance des pièces. Etages de deux mètres soixante-dix centimètres de hauteur entre planchers. Grands salons : bordure, modèle B. Profil : douze centimètres de largeur. Principaux ornements : oves, et un rang de perles. Parties brunies :

les œufs des oves, les perles ; trois membres de moulures. Grandes chambres : bordure modèle D. Profil : largeur onze centimètres. Principaux ornements : une petite torsade, une grande doucine en feuilles d'eau, un rang de petites perles ; un ruban enlacé. Parties brunies : deux cavets ; les côtes saillantes des feuilles d'eau les petites perles. Petites chambres : bordure modèle L. Profil : largeur, huit centimètres. Pas d'ornements : parties brunies : quatre baguettes. Etages de deux mètres quatre-vingt-dix centimètres de hauteur. Grands salons : bordure modèle B, en treize centimètres. Grandes chambres : bordure modèle D, en onze centimètres. Petites chambres : bordures modèle L, en huit centimètres. Etages de trois mètres vingt centimètres de hauteur. Mêmes bordures que pour les précédents. Etages de trois mètres trente centimètres de hauteur. Grands salons : bordure modèle A. Profil : largeur quatorze centimètres. Principaux ornements : brindilles et feuilles en relief ; deux rangs de perles. Parties brunies : une partie des brindilles ; feuilles et cosses ; les deux rangs de perles. Grandes chambres : bordure modèle D, en douze centimètres. Petites chambres : bordure modèle L, en huit centimètres. Au cinquième étage, dans les chambres de maîtres : bordure modèle L, en huit centimètres. Au-dessus des cheminées, les bordures encadreront les glaces sur trois côtés seulement. Vis-à-vis des cheminées, les bordures encadreront les glaces sur quatre côtés. Les angles seront arrondis : les profils des moulures, et les ornements en carton pierre, devront être d'une exécution parfaite. Ces bordures seront dorées à l'eau et à la mixtion, au moyen de l'or jaune à quatre-vingts francs le mille, sur apprêt convenable. Les parties mates et brunies seront exécutées avec le plus grand soin.

Glaces à Vitrer.—Au rez de chaussée, les devantures de boutique seront garnies de glaces à vitrer. A l'entresol, et aux trois principaux étages au-dessus de l'entresol, les croisées sur rue seront également garnies de glaces à vitrer.

PEINTURE, TENTURE, ET VITRERIE.

Etage Souterrain, Peinture, Impressions.—Pour tous les fers et fontes non apparents, y compris le plancher haut régnant dans la moitié environ de cet étage, *impressions au minium* une forte couche. Pour ceux apparents, ils seront peints à l'huile trois couches, dont une au minium. Les portes, châssis, lambris, &c., et généralement les diverses menuiseries à faire dans cet étage seront peintes à l'huile. Aux pièces plafonnées, les murs au-dessus des lambris entièrement à l'huile. Les murs des cuisines entièrement à l'huile trois couches, avec soubassement idem d'un mètre 50c. de hauteur. Seront peints pareillement, les jambages manteaux, hottes de cheminée, et toutes autres dispositions.

Les *plafonds* seront peints *à la colle* deux couches. Les *latrines* seront peintes *à l'huile* trois couches. Dans les pièces voûtées de cet étage, il n'y aura d'autres peintures que celles des bois, fers, et fontes, et autres dispositions nécessitées par leur destination. Ces peintures seront faites conformément à ce qui a été dit ci-dessus.

Vitrerie.—Les portes et les cloisons de distribution, que les plans indiqueront comme devant être vîtrées, le seront en verre blanc d'Alsace de troisième choix, sans défauts ni bouillons. Les parties, qui seront particulièrement sujettes à une grande fatigue, seront vîtrées en verre double de deuxième choix. Les plans indiquent les parties où les verres seront dépolis ; à cet effet ils seront au moins demi-doubles.

Peinture.—*L'impression* au minium, une forte couche de tous les fers du plancher haut, des colonnes, linteaux en fer, châssis chasse roues, tuyaux, soupiraux, grilles, &c. La *porte-cochère* sera peinte en *imitation de bois ou de bronze*, sur fond à l'huile, trois couches avec vernis gras à deux couches. Sous le passage de porte-cochère, il en sera de même pour les portes, le plafond, et tous les objets susceptibles de recevoir de la peinture. La *loge du concierge* sera entièrement peinte *à l'huile* trois couches, avec filets étrusques, haut et bas des murs. Dans *l'escalier principal* et son vestibule, les soubassements avec leurs plinthes et cimaises, les portes, les limons, les contre-marches seront peints en imitation de bois sur fond à l'huile, *trois couches, et vernis* au vernis gras deux couches. Les plans indiqueront si les murs seront couverts de stucs, ou s'ils seront peints, et dans ce dernier cas, ils seront distribués en champs et panneaux peints en imitation de marbre, de deux tons, avec même fonds et même vernis que ci-dessus. Les plafonds droits et rampants seront à la colle deux couches. La rampe sera peinte au vernis et bronzée à l'effet.

Les peintures intérieures des boutiques ne font pas partie du présent devis.

Les murs des vestibules et de *l'escalier secondaire* seront peints en décors sur fond à l'huile, trois couches, et à deux tons. Le reste de la peinture comme à l'escalier principal. Les *murs des escaliers de service* auront un soubassement en ton de bois, à l'huile trois couches dans une hauteur d'un mètre cinquante centimètres, et le surplus sera peint à l'huile trois couches en ton chamois avec filets étrusques, de deux tons, haut et bas. Les plinthes, limons, marches et contre-marches en ton de bois. Les *corridors* et dégagements communs auront un soubassement en ton de bois à l'huile trois couches, dans une hauteur d'un mètre cinquante centimètres, et le surplus sera peint à l'huile trois couches en ton chamois, avec filets étrusques de deux tons, haut et bas. Les *murs des lieux d'aisance* seront peints à l'huile trois couches. Tous les *plafonds*, à la colle, deux couches. Les *corniches* à l'huile, trois couches, uni ou de décor selon le parti adopté dans chaque pièce. Tous les *parquets encaustiqués et frottés*, à l'exception de ceux des boutiques. Tous les *bois d'escalier* seront peints a *l'huile bouillante*, deux couches pour assurer leur conservation. En outre, les contre-marches et limons des principaux escaliers seront peints en décor, comme il a été dit ci-dessus ; les marches seront encaustiquées et frottées ; les marches, contre-marches, et limons des escaliers de service, seront peints à l'huile deux couches. Les plans indiquent ceux des escaliers dont les dessus des marches sont en pierre, et lesquels par conséquent ne doivent recevoir aucune peinture.

La peinture des *ferrures* sera faite suivant l'usage et d'après les prescriptions des Architectes. Dans les pièces principales, les ferrures seront peintes au vernis et bronzées. Dans les pièces secondaires, elles seront peintes en ton uni. Dans l'escalier principal et l'escalier secondaire, les *rampes* seront peintes au vernis et bronzées. Dans les escaliers de service, elles seront peintes en ton uni. Les plans indiquent celles des *devantures de boutiques* qui devront être en fer, et celles qui devront être en menuiserie. Les *devantures de boutiques en fer* seront peintes à l'huile deux couches, dont une au minium. Les *devantures de boutiques en bois*, recevront sur leurs deux faces, deux couches de peinture à l'huile. Les devantures en bois sur la cour recevront trois couches de peinture à l'huile sur leurs deux faces. Les plans indiqueront s'il doit y avoir à cet étage, *des croisées, des persiennes, ou des volets.* Dans ce cas, ils devront être peints à l'huile trois couches.

Les *poëles*, en biscuit, seront peints en bronze à l'huile 3 couches, les cuivres nettoyés, et la port minée à la mine de plomb. S'ils sont en faïence, ces derniers ouvrages seront seuls faits. Les minages des *intérieurs de cheminée* seront faits suivant l'usage, et d'après les prescriptions des Architectes.

Vitrerie.—Vitres-Dalles.—Les plans indiquent s'il y a ou non des vitres-dalles, placées sous les galeries, pour éclairer l'étage souterrain. Dans ce cas, elles seront fournies pas l'entrepreneur de Peinture et vitrerie, conformément aux indications des Architectes, et de forte épaisseur. Les plans indiquent si les *devantures* de boutiques sont *vitrées en glace*, ou en verre double. Dans le premier cas, la fourniture et pose des glaces, fera partie de la miroiterie. Dans le deuxième cas, la vitrerie sera faite en verre double, de premier choix, hors mesure, s'il y a lieu, et posé à joints vifs. La vitrerie de toutes les croisées, si elle résulte des plans, des châssis sur les cours, et des cloisons vitrées sera en verre simple de premier choix, sans bouillons. La vitrerie des portes sur la cour et dans les passages, sera en verre double, hors mesure. Les plans indiquent ceux de ces verres qui devront être dépolis.

Entresol.—Peinture.—Les travaux de peinture et de tenture seront analogues à ceux décrits à rez de chaussée ; en ce qui concerne :—Les impressions ; les portes-cochères et leurs impostes ; les escaliers et leurs bois ; les devantures de boutiques ; les poëles. Ils seront analogues à ceux décrits ci-après au premier étage, en ce qui concerne les autres peintures.

Vitrerie.—Les fournitures de vitrerie pour cet étage seront analogues à celles décrites au rez de chaussée, en ce qui concerne la vitrerie des devantures, et à ceux décrits au premier étage, pour tous les autres travaux.

Premier Etage.—Les travaux de peinture à cet étage seront généralement analogues à ceux décrits au rez de chaussée ; en ce qui concerne les dessus de marches de l'escalier principal, ils seront en bois et encaustiqués. Dans les *antichambres* principales et les couloirs qui leur font suite, le soubassement, la corniche, les menuiseries et les murs, seront entièrements peints en imitation de bois sur fond à l'huile, trois couches, avec deux couches de vernis gras. Les *petites antichambres* auront un soubassement en imitation de bois, à l'huile, trois couches, dans une hauteur d'un mètre cinquante centimètres, et le surplus des murs restera uni pour recevoir la tenture. Toutes *les faces des portes* donnant sur les corridors, antichambres, paliers, &c., seront peintes en imitation de bois, sur fond à l'huile, trois couches, et vernis deux couches. Dans les *grands salons*, les murs, dans toute leur hauteur, les ébrasements, les corniches, les portes, leurs chambranles, les volets intérieurs, les ornements et les rosaces, seront peints en blanc mat à l'huile trois couches, avec réchampissage aux endroits désignés par les Architectes. Dans les *petits salons* et les autres pièces, les soubassements, les ébrasements, les corniches et les menuiseries, les ornements et les rosaces, seront peints à l'huile trois couches, soit en blanc mat, soit en gris de deux tons. Le surplus des murs restera uni pour recevoir la tenture. Les faces intérieures *des portes d'armoires* seront peintes à l'huile à 3 couches. Toutes les *ferrures* intérieures seront peintes à trois couches, bronzées à l'effet, et vernies. Celles des grands salons seront vernies au feu, travail réservé avec la dorure. Celles des pièces secondaires, cabinets et dégagements seront peintes d'un ton uni et vernies. Dans les *cuisines*, les murs, les parties principales des cheminées, des fourneaux et de leurs hottes, et la menuiserie, seront entièrement peints à l'huile à 3 couches. Les *cabinets d'aisance* seront peints à l'huile trois couches ; soubassement en ton foncé, les murs au-dessus en ton clair, avec bordure étrusque haut et bas. Les *extérieurs* de croisées et les persiennes seront peints à l'huile trois couches. La *saillie des bandeaux en pierre* recevra un *enduit hydrofuge*, ou une peinture idem, à trois couches. Les *balcons* extérieurs et les défenses seront peints à l'huile, trois couches, dont une de minium.

Tenture.—Les *travaux préparatoires* de la tenture seront faits *avec le plus grand soin*, et consisteront ainsi. *Collage de papier* gris d'apprêt. Collage de papier bleu dans les armoires. *Bandes de zinc* sur les joints des portes dissimulées. *Bandes de calicot* sur les joints de brisure. *Toile marouflée* sur les menuiseries. *Egrainage* des murs, &c. &c.

Les *antichambres principales*, et les couloirs que leur font suite, étant destinés à être *peints entièrement*, ne recevront pas de tenture. Dans les *petites antichambres*, le soubassement sera peint dans une hauteur d'un mètre cinquante centimètres, et le surplus des murs recevra *du papier à un franc le rouleau*, prix d'acquisition. Les grands salons étant destinés à être peints entièrement, ne recevront pas de tenture. Les petits salons recevront *un papier à trois francs* le rouleau, prix d'acquisition. Joncs dorés haut et bas, et dans les angles rentrants. Les grandes chambres à coucher recevront *un papier à deux francs* le rouleau. Haut en bas *bordure veloutée* et découpée. Les chambres moyennes recevront *un papier à un franc cinquante centimes* le rouleau. Haut et bas *bordure veloutée*, non découpée. Les petites chambres recevront un *papier à un franc le rouleau.* Haut et bas *bordure non veloutée.* Les cabinets de toilette recevront *un papier à* 80 *centimes* le rouleau, avec *bordure assortie.*

Vitrerie.—La vitrerie de toutes les *croisées* sera en *verre d'Alsace* ordinaire, de choix ; celle des portes vitrées et des châssis intérieurs, sera en *verre double dépoli.* Tous ces verres pourront être hors mesure ou à joints vifs, si les dimensions des menuiseries l'exigent. Les *croisées* sur les faces, seront *vitrées en glace.* Cet article n'est pas à la charge de l'entrepreneur de Vitrerie, et se trouve à la Miroiterie. Les *châssis* sous les courcelles seront *vitrés en verre* demi double, dépoli, posé entre deux mastics. La pose de ce mastic sera faite avec le plus grand soin, pour ne pas tacher les verres.

Les *deuxième, troisième et quatrième étages* au-dessus de l'entresol sont absolument conformes au premier étage, pour la peinture, la tenture et la vitrerie. Les extérieurs des lucarnes seront peints à l'huile à trois couches. Au 4$^{e\cdot}$ étage, les croisées sur les rues et place seront vîtrées en verre double, de premier choix, poussé au lagre, hors mesure, s'il y a lieu, et posé à joints vifs si cela résulte de la disposition des menuiseries.

Cinquième Étage et Comble. Observation générale.—Cet étage comprendra, ainsi que cela a été dit ci-dessus les chambres de domestiques, et en outre, des pièces plus importantes destinées à être louées, et dont le nombre résulte des plans.

Peinture.—Les *couloirs* desservant les chambres de domestiques seront peints à l'huile 3 couches. Le soubassement de 1^{m}·30 de hauteur en ton foncé ; le surplus des murs en ton clair, avec bordure étrusque haut et bas. Les menuiseries en ton foncé. Les *chambres de domestiques* seront entièrement peintes, et d'une manière analogue aux couloirs. Les *latrines communes* seront entièrement peintes à l'huile trois couches. Dans ces parties les pièces de ferrure unies. Dans les *pièces carrelées*, mise en couleur des carreaux à l'huile 2 couches, et à la colle 2 couches, *encaustique et frottage.* Les couloirs desservant les chambres de maître et leurs trémies seront peints, comme ceux décrits au 1er étage. Les peintures des chambres de maître seront semblables à ce qui a été dit 1er étage pour les petites pièces. Dans ces parties, les pièces de ferrure seront *bronzées* à l'effet et vernies. Les *parquets* seront *encaustiqués et frottés.* Les impressions, le haut des escaliers secondaire et de service, les extérieurs, &c., seront analogues à ce qui a été décrit ci-dessus aux divers étages.

Tenture.—Les *couloirs* étant destinées a être peints entièrement, seront sans tenture. Même observation pour les chambres de domestiques. Les chambres de maîtres recevront du papier à 1f. 20c. le rouleau, avec bordure assortie.

Vitrerie.—Les croisées seront vitrées en carreaux de *verre blanc ordinaire.* La vitrerie de châssis intérieurs sera semblable. Les châssis des combles seront vitrés en *verre demi double*, entre deux mastics. Les toitures vitrées seront en verre double de 3^{e} choix posé à recouvrement, entre deux mastics sur canaux en zinc, système Fincken, qui seront fournis et posés par l'entrepreneur de Vitrerie.

Observation générale sur les Travaux de Peinture, Tenture, et Vitrerie.

En résumé, l'entrepreneur fera toutes les Peintures, Tentures, et Vitreries d'usage sans en rien excepter et sans pouvoir se prévaloir des omissions qui pourraient exister au present devis, et il se conformera constamment aux prescriptions des Architectes, tant pour les procédés à suivre, que pour le choix des tons et des décors. Les fournitures seront de la meilleure qualité dans leur espace, et le blanc de zinc sera employé à l'exclusion du blanc de céruse. L'entrepreneur de Peinture fera avec le plus grand soin tous les *travaux préparatoires* en usage, tels que les époussetages, égrenages, grattages, lavages, rebouchages, lessivages, ponçages, et tous autres nécessaires pour obtenir la perfection désirable. Il fera des *enduits* au mastic dans toutes les parties destinées à recevoir du décor, et en outre, dans les grands et petits salons. Dans les pièces destinées à recevoir du décor, les portes perdues, les armoires, faux coffres en bois, &c., seront garnis de *calicot* sur toute leur surface. Ce *calicot* est à la charge de l'entrepreneur de Peinture. Dans les pièces qui sont indiquées sur les plans pour être *dorées*, l'entrepreneur de Peinture fera *les encollages et ponçages* des parties destinées à recevoir la dorure. La *dorure* ne fait pas partie du présent devis, non plus que le vernis au feu des pièces de ferrure.

FUMISTERIE.

Rez de Chaussée.—Les *cheminées* auront un *châssis* à rideau en tôle, avec encadrement en cuivre; la grandeur de ces châssis sera en rapport avec celle des cheminées, et ils devront peser, compris rideaux, mais non compris les contre-poids, et au minimum. Pour le châssis de $55^{c.}$ d'ouverture pour les cheminées, de 1·10, $6^{k.}$ Pour ceux de $60^{c.}$ pour les cheminées de 1·20, $7^{k.}$·50. Pour ceux de $65^{c.}$ pour les cheminées de 1·30, $8^{k.}$·50. Pour ceux de $70^{c.}$ pour les cheminées de 1·40, $10^{k.}$ Pour ceux de $80^{c.}$ pour les cheminées de 1·60, $13^{k.}$ L'intérieur sera rétréci en briques, avec pans coupés en faïence âtre carrelé en carreaux de terre cuite, et plaque de fonte au fond de la cheminée de même largeur que l'ouverture du châssis.

Il sera fourni pour la *loge du concierge* un *fourneau portatif* ayant deux réchauds carrés, et un réchaud économique pour le pot au feu. Les *poëles*, où il en sera désigné, seront en faïence, cerclés en cuivre; garnis intérieurement de cloches, tuyaux, plaques en fonte; boîte en tôle pour la circulation de l'air chaud, porte en cuivre fermant à clef, bouches de chaleur, tuyau en faïence, en cuivre, ou en tôle, suivant l'emplacement; et tous autres accessoires. Il sera établi par chaque cheminée et chaque poële, *une ventouse* dont la section sera au moins de $0^{m}\cdot15^{c.} \times 0^{m}\cdot12^{c.}$ ou équivalent. La fourniture des *grilles* fera partie de la Serrurerie, et décrite à cette catégorie. Les plaques de fonte seront fournies par l'entrepreneur de Serrurerie. *Observation générale.*—L'entrepreneur de Fumisterie devra faire tous les travaux nécessaires, pour garantir les cheminées de la fumée.

Entresol.—Observation générale.—Les différents travaux de Fumisterie de cet étage seront semblable à ceux décrits ci-après pour le premier étage.

Premier Etage.—Les *cheminées des salons* seront rétrécies par trois plaques de fonte, et un soubassement contourné, suivant la forme de la traverse de la cheminée, et s'ajustant avec les deux plaques de côté; ces trois plaques et le soubassement seront à sujets, avec larges encadrements en cuivre; âtres carrelés en carreaux de terre cuite. Toutes *les autres cheminées* auront un châssis en cuivre à moulures, avec rideau en tôle et contre-poids, et seront rétrécies en briques, et revêtues en pans coupés d'une garniture en faïence ingerçable en trois morceaux; l'âtre sera carrelé en carreaux de terre cuite; pose d'une plaque de fonte au fond, et de deux autres sur les côtés. Toutes les cheminées auront des *ventouses* dont la section sera d'au moins 15c. sur 15, ou équivalent. L'orifice sera établi conformément aux détails des Architectes; il sera, soit circulaire, de 16c. environ de diamètre, soit en barbacane dissimule. Dans tous les cas, les grilles seront fournies par le Serrurier. Les *ventouses* seront expressément recouvertes soit par des tuiles hourdées en plâtre, soit par des plaques de tôle, si l'exiguité de l'espace l'exige. Dans ce cas, les tuiles ou les plaques de tôle seront à la charge de l'entrepreneur de Fumisterie.

Les *plaques de fonte* à mettre dans les cheminées seront fournies par l'entrepreneur de Serrurerie. Les *poëles apparents,* dont la situation est indiquée sur les plans, seront en faïence, modèles au choix des Architectes, cerclés en cuivre, avec porte idem; tablette en marbre St. Anne Belge de 3c. d'épaisseur, à boudin, colonnes en biscuit ou en faïence, ornées de chapiteaux, flammes, &c., soupapes. Les *poëles non apparents* seront en biscuit. *Tous ces poëles* seront garnis intérieurement d'une cloche en fonte, avec plaques et tuyaux idem, d'un réservoir de chaleur en tôle; conduisant aux bouches de chaleur, qui seront en cuivre à charnières grillagées, et de 13c. diamètre. Dans le cas où les plans l'indiqueraient, ces poëles seraient disposés pour chauffer d'autres pièces voisines, au moyen de bouches de chaleur en cuivre semblables aux précédentes, ou à coulisses ou à soufflets, modèles en cuivre, en tôle, ou en fonte, au choix des Architectes. Le tout devant être disposé pour éviter un contact immédiat entre l'air chaud et les moulures, ou revêtements en bois.

Deuxième, Troisième et Quatrième Etages au-dessus de l'Entresol. Observation générale.—Les deuxième, troisième et quatrième étages au-dessus de l'entresol sont absolument semblables et conformes au premier étage pour tous les travaux de fumisterie, mais suivant les mesures indiquées sur les plans.

Cinquième Etage au-dessus de l'Entresol et Comble.—*Toutes les cheminées* des pièces planchéïées sont semblables à celles du premier étage, sauf les dimensions. Toutes les cheminées *des pièces carrelées* seront semblables, mais sans faïence aux pans coupés. *Ventouses* et plaques de fonte, comme au premier étage. Les *tuyaux en tôle* qu'il pourra être nécessaire de placer sur les cheminées, hors des combles, ne font pas partie du présent devis.

PAVAGE, TROTTOIRS, ET TERRASSE.

La *cour* sera pavée en *pavés d'échantillon* très soignés, de deux, posés en losange à chaux et ciment, sur forme en sable de rivière descendant jusque sur la chape en bitume. Le *passage de la porte-cochère* sera pavé en pavés d'échantillon de deux, posés en losange, avec traverses droites formant des compartiments. Les *trottoirs des passages* seront *en granit*, avec bordures en même matiére, refouillés pour le passage du ruisseau, et conformes aux détails des Architectes. On y ménagera l'emplacement des cuvettes à syphon qui devront être recouvertes. Les *trottoirs sur les rues* autres que la Rue de Rivoli, seront *en bitume avec bordures en granit,* excepté devant le passage de porte-cochère où le sol sera pavé en petits pavés d'échantillon, avec bordures aussi en granit. Le tout conformément aux prescriptions de l'administration municipale et mis en état d'être reçu par elle. Le *sol sous les galeries* et au dehors, *sera bitumé,* et bordé sur la Rue de Rivoli par des bordures en granit, avec remplissages en pavés d'échantillon, de deux, posés en losanges au droit du passage de porte-cochère, le tout conformément aux prescriptions de l'administration, comme il a été dit ci-dessus.

Terrasse.—Les travaux à exécuter comprennent aussi bien ceux en excavation de l'ensemble des caves que ceux en rigole des différents murs. Le *talus donné aux fouilles* en excavation sera d'au moins $0^{m}\cdot25$ d'inclinaison par mètre de hauteur. Ces fouilles sont

faîtes sur des terrains occupés par des constructions récemment démolies et dont on a dû enlever tous les murs de cave, de fosse et de fondation. L'entrepreneur ne pourra donc prétendre à aucune indemnité motivée sur la présence de débris partiels de murs oubliés dans la démolition, à moins que chacun de ces débris n'excèdent respectivement un mètre cube. Autrement ils seront comptés comme fouille ordinaire. Il en sera de même pour le cas où il rencontrerait quelques portions de terre imprégnées de matières fécales ou d'urines ; et il ne pourra se refuser qu'à l'enlèvement de matières encore enfermées dans des fosses, dans le cas où il s'en rencontrerait, qui aient été oubliées. Toutes les diverses natures de fouilles sont ramenées au prix moyen porté à la serie de prix de terrasse de la Ville de Paris.

Les *démolitions de murs,* s'il s'en trouvait qui rentrent dans les conditions énoncées ci-dessus, seront payées suivant le prix porté également dans la susdite série de prix. Leur enlèvement aux décharges publiques sera fait au même prix que celui de la terrasse ordinaire.

Specification of sundry Works required to be performed for His Grace the DUKE OF NORTHUMBERLAND, *in Taking Down and Rebuilding the* EMBANKMENT WALL, *at* ISLEWORTH, *in the Mill-stream between the Bridge and River Thames, according to the accompanying Plans and Section prepared for that purpose.* HENRY MAWLEY, *Architect.* 1856.

Take down, clear, and cart away the old wall, leaving on the premises such of the old bricks as may be useful to be broken up and mixed with ballast to form concrete. Draw up and remove all the old planks, piles, and timber, and any old foundations, that may obstruct the proper driving the new piles, or in the formation of the new foundation. *Shore up* street, and secure the embankment and old walls from time to time as occasion may require, also the old wall next the river, that is not to be rebuilt. Fix temporary steps, when the present stone steps are removed for use of workmen and the public, also any hoarding, fences, piles, and enclosures required to protect the public, and secure the free passage of the mill-stream. Erect any worksheds, that may be required for protecting materials from the weather, and temporary convenience for workmen until all the works are completed. Dig out, clear, and cart away all soil, earth, rubbish, and other materials necessary for the due and complete execution of the several works; fill in from time to time, as required, with best of the ground dug out, and well ram the earth up to the new concrete shown in drawings.

Materials.—All the bricks to be the best sound, hard, well-burnt grey stocks, the mortar to be composed of the best fresh-burnt well-screened Dorking lime, and good clear, sharp sand, in the proportion of one part of lime to two parts of sand, and to be thoroughly mixed together. The cement to be of the best description, and kept from the weather until used. The *concrete* to be prepared in the best manner, using 6 parts ballast and broken bricks, with 1 part ground fresh lime well tempered together, and thrown from a stage at least 7 feet in height, and well trodden in. The *fir timber* to be used, to be the best Baltic or Memel yellow fir, free from large knots and other defects; the *oak* to be of English growth, well seasoned, free from all defects. The *iron* for bolts and ties to be the best Swedish iron, well hammered, and neatly and properly formed and welded together.

Provide and fix 94 *fir or birch piles*, die square, 11 feet long, 8 inches × 8 inches, properly shoed and capped with iron in the usual manner, and drive the same under the line of wall, to form foundation, and leave same square and level at the top. Have 14 oak sleepers 6 feet 6 inches long, and twenty-six 5 feet long, all 10 inches × 6 inches, well and securely fastened to the piles beneath. Provide and lay on same in a secure manner 2-inch *oak planking* the entire length, and 5 feet in width. Also provide and lay to same 6-inch Yorkshire templates, 2 feet 6 inches × 3 feet, to receive brickwork, properly secured. Provide 2½-inch *oak sheet piling*, 9 feet long, with iron caps and shoes, and drive same the entire length of new wall, to prevent the current from the mill undermining the foundation of the new wall, and leave same all in good order. Provide and fix *oak whaling*, 6 inches × 6 inches, to secure this piling the entire length, and continued round circular corner, and have 14 inch rod bolts with washers and plates to tie in same, as shown in section.

Carry up the *foundation of new wall* according to drawings, 4 feet 6 inches in width × 2 feet in height, with circular battering face, according to proper moulds, prepared and fixed for the purpose, all worked in best *Portland cement*, including counterforts with all necessary cutting, as shown. Carry up *wall and counterforts* above same to the top, to be carried up in hard stock brickwork and best mortar worked to a battering face as before described. Provide and lay at regular intervals 7 tier of 1½-inch iron hoop bond, well pitched, 3 in each tier, the whole length of the wall, and return well lapped and secured. Make good in bricks and cement the junction of new and old wall next the river.

Take down and reset the *stone steps* adjoining the bridge, having any new ones to replace those broken, with proper and substantial foundations and walls to support same, and concrete as required, and make good to same.

Provide and fix *oak whaling* to upper part of wall, 9 inches × 6 inches, continued round circular corner in a proper manner. Have 14 inch rod bolts, 25 feet long each, all well painted 2 oils, to secure same to No. 28 oak piles, 10 feet long, 6 inches × 6 inches, and oak whaling back of same, 6 inches × 6 inches, as shown in section; dig out for same as required, and well ram earth afterwards. Provide and fix *oak rounded kerb* on top of wall, 12 inches × 7 inches, well scarfed and bolted together, and having 14 inch bolts, 3 feet long, each painted 2 oils, with washers and plates to secure same to wall.

The entire *space back of new wall* and round the counterforts, 2 feet in width at least, in every part, *to have concrete* as before described. Care being taken at the proper time to provide and fix the best 9-inch glazed *tubular drain pipes* to take the water from the surface when properly formed, and from the *pump* into the creek, without running over and down the face of new wall, and laid to a proper fall. Provide and lay a *proper channel* for run of the rain-water on the embankment, to have funnel drain to communicate with drain last mentioned; form a cesspool and have 12-inch cast-iron *grating and frame* placed as directed, and at conclusion *provide and lay gravel* on the surface 6 inches thick, 10 feet in width from new wall the entire length.

Provide 7 *fender pipes*, 20 feet long each, 14 inches × 14 inches, with proper *iron shoes and iron rings* at top, drive same into the natural earth at regular intervals, for security to the new wall from barges and other craft, each with *cast iron caps and belts* to same, all properly secured and well tarred over.

Extension of the QUAY, NEWCASTLE-UPON-TYNE. JOHN DOBSON, *Architect. Specification of Work and particulars of Materials to be used in the Construction of One Thousand Feet in Length of New Quay Wall, extending from the Broad Chare Landing down to the Swirle.*

General.—The whole and every part of the works described in the annexed specification and drawings are in every respect and particular to be executed in the most substantial, solid, and workmanlike manner, with stone of the best quality, that can be procured in this district, and such other materials as are hereinafter described. Those, who tender proposals, are requested therein to state the price per lineal foot at which they will execute the work, at the several depths of 12 feet, 10 feet, and 8 feet below low-water mark, according to the following specification and drawings, and to the entire satisfaction of the Architect and Committee, and in compliance with the following

CONDITIONS.

1. *Temporary Fences.*—The Contractor will be requested, immediately on the commencement of the works, to erect a sufficient timber fence to enclose that part of the quay in progress, and of such width as the Architect shall approve.

2. *Care of the Work.*—From the commencement to the finishing of every part of the work, the care of the same to rest on the Contractor; and if any injury shall be done to it by floods, or weather, or any other cause, the Contractor shall repair the same at his own cost, so that at the conclusion of the work every part of it shall be complete and perfect.

3. *Providing of Materials, &c.*—The Contractor is to provide all necessary timber, iron, and other materials, as well as labour for stages, scaffolding, moulds, templates, centres, cranes, and all working and other implements; also for piling and planking the foundations where considered necessary; and also to provide sufficient engines for piling, pumping, and grinding the iron dust and mixing the mortar, and all other machinery and things necessary for quick despatch in the execution of the work in the most perfect manner.

4. *Cofferdams, Puddle, and Excavations.*—The Contractor to form sufficient cofferdams, in lengths as laid down on the general plan; and whatever necessary timber-work, puddling, and excavation, as may be found necessary for excluding the tide-water, so that the masonry may remain dry as long as the Architect may deem necessary.

is completed to the satisfaction of the Architect, the Contractor to be paid nine-tenths of the value of the same, according to contract price, and the remainder at the completion of the whole work.

6. *Old Stones that may be used.*—As soon as the parts 1, 2, 3, and 4 of the new walls are completed to the levels of the footings of the present quay wall, the piles for protecting the present quay wall may be drawn progressively, and such of the old stones as may be considered sufficient for backing the new work may be used, and the ground solidly rammed down behind the new work, and levelled up as the work proceeds.

7. *Coping and finishing the Wall-top.*—As soon as the wall is built up to within 3 feet of the intended height at each length, rough blocks are to be laid on to the necessary height, and the cofferdam and timber fence to be removed to the next length, and the ground on the quay roughly levelled for the convenience of public business; and as soon as the third length is completed, the first and second lengths are to be topped and finished.

8. The Contractor to make all the necessary *excavations*, and to form a *puddle wall behind the quay wall, and counterforts* of chalk rubbish, 3 feet thick, to be firmly beat in at the back of the quay-wall as the building advances, so as to be impervious to water. The space between the chalk wall and the old quay, extending from the Broad Chare Landing to the end of the cofferdam No. 4, to be filled in with solid chalk and gravel, which will be provided at the cost of the Corporation, but the Contractor to be at the cost of conveying it out of the keels. Such of the excavation of the foundations of the new quay wall, as the Architect may consider fit for that purpose, may also be deposited there. The wall east of the cofferdams, extending to the Swirle, as on the ground plan, to be filled up at the back with chalk, within the cofferdam, as above described; but the remaining part, behind the cofferdam, will be done at the cost of the Corporation. The space in front of the footings to be solidly rammed down with clay, as directed.

9. *The Works.*—The first and second course of footings to be laid so as to break joint, and not less than 12 inches in thickness. The upper bed of each course to be pared and levelled before the next course is laid on, and to be square and close jointed the full thickness. The courses above, up to the level of low-water mark, to be of blocks, 12 inches thick, laid alternate headers and stretchers; the stretchers to be not less than 24 inches broad on the bed, and to average about 3 feet in length. The headers to be not less than 24 inches on the face, and not less than 4 feet 6 inches on the bed.

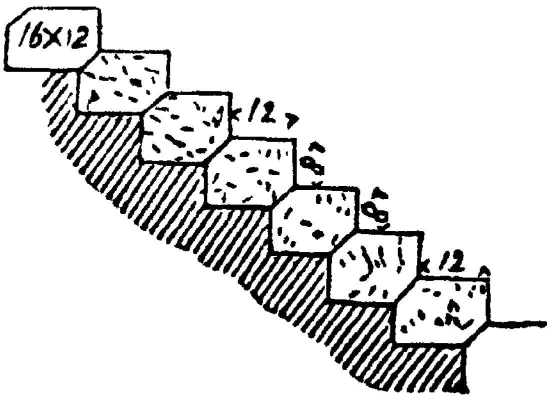
The whole of the bed and joints to be broached fair to nearly their full thickness, laid flush in soft mortar, and the filled with mortar, and all interstices to be grouted, so as to be impervious.

The *backing* to consist of large flat and level-bedded walling-stones, each to contain not less than 2 feet square in the bed, roughly hammer-dressed, so as to form level and close beds, breaking joints in a regular manner; the whole set on soft mortar; the end-joints to be grouted and solidly packed; the stretchers of the face to be not less than 18 inches in the bed, and not shorter than 2 feet; the headers not less than from 3 feet to 4 feet in the bed, and not less than 16 inches thick in the face; each header to be opposite the stretchers in the front and to break joint, as in the face, and not more than 2 courses in height to 1 of the exterior work; the face of each levelling to be pared, and truly radiating to 100 feet radius. The whole of the face to be set in with lime-mortar, prepared by edge-stones, as afterwards specified, and the backing and counterforts, or rubble-work, with coarser mortar prepared by the puggin mill.

10. The *counterforts* to be built of the same kind of materials as the backing, using the largest stones, which are to be well bonded to the quay wall, with care, and the exterior stones set without any pinning.

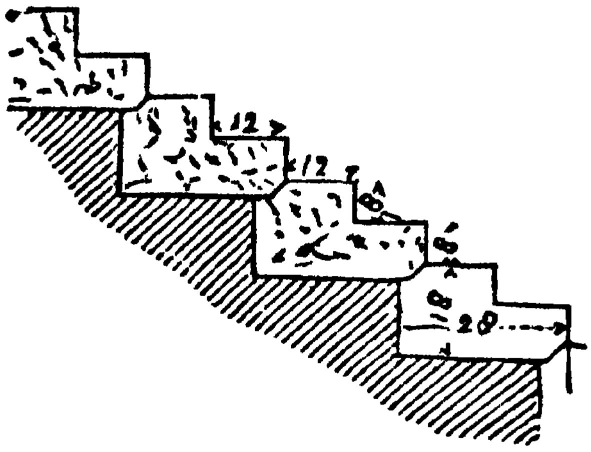
11. The *face-work* above low water to be composed of blocks, 16 inches in height, and to have all the bed-joints chamfered 1½ inches on each stone, and in other respects to be the same as the work below.

12. The *coping* not to be less than 3 feet in the bed, 2 feet thick, and from 3 feet 6 inches to 5 feet long in face; to be clean broached, with hewn joints. The *steps of the principal stairs* to be of the best Aberdeenshire granite, of the length and form as shown by the plan, to be 16 inches broad and 12 inches thick, to be dressed straight, and closely jointed.



The *walls supporting the steps* to be of large bedded walling-stones, dressed flat in the beds, and not inferior to the rubble-backing of the new quay walls. The *walls* to have footings, as shown by the sections and plan, but they may be founded at any depth at which a sufficient firm foundation can be obtained, as shall be directed at the time by the Architect. They must be corbled over at the top with 3 courses of projecting stones, as shown by the section. The return walls, at each end of the stairs, to be built in the same manner as the quay walls, and puddled solidly up with chalk rubbish around both these and the other walls of the stairs, in the same manner described for the quay walls.

13. *Small Stairs.*—The *recess and steps* of the small stairs to be formed as per drawing, and the walls to be built in the same manner as the quay wall; 2 steps shall be wrought on 1 block, thus—



14. The *quay walls* are to be constructed in every respect in the same manner, and with the same kind of materials as provided for the quay wall; the only difference being that the walls are not to be founded at the same depth, and the thickness is varied as per drawings.

15. The *mortar* for the front ashlar to be of the best Dorset lime from Lyme Regis, to be burnt at Newcastle, and when slaked to be mixed with 1 part of clear sharp sand, brought from the mouth of the Derwent, to 1 part of lime, to be kept in a dry situation till wanted. There is then to be added 1 part of *iron dust* or slag and 1 part of clean scars, which must be previously ground under edge stones, and the whole passed through a screen to separate it from coarse particles. The mixture is then to be put under edge stones and wrought into mortar, and not more made at once than can be used that day.

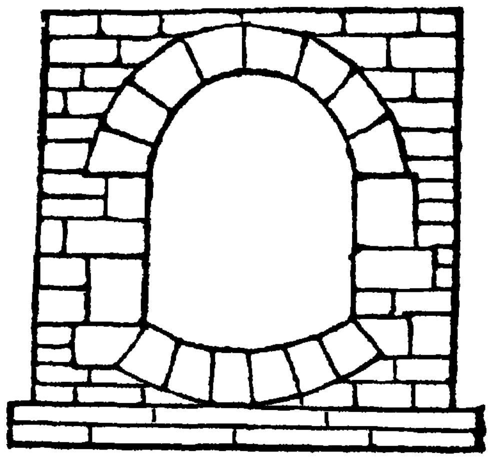
16. *Coarse Mortar of Backing.*—The mortar for the backing to consist of the same component parts as above, all put through the puggin mill, and not more made at once than is required for immediate use.

The *tender* to state what reduction per lineal foot will be made if the backing is allowed to be built with the stone lime generally used in Newcastle for buildings, but prepared and mixed with sand, iron dust, &c.

17. The Contractor must also state in his tender the cost of each circular *well-hole, or shaft for cranes,* that may be required along the back of the quay wall; each well-hole or shaft to be 13 feet deep by 4 feet diameter. The sill or bottom to be 5 feet diameter and 13 inches thick, and bedded on a course of flat 6 or 8-inch stones laid flush in water lime mortar.

The side walls to be of blocking course 18 inches thick, well dressed on the bed and joints with the hammer, and laid flush in good lime mortar of the same description as that for the quay wall. The outside of the wall to be puddled round with clay or chalk rubble, beat firmly down as the wall is building. The cast-metal step for the foot of the crane to be sunk in with lead; the step and lead to be furnished for the Contractor.

The outside walls are also to have 1 course of rough broached ashlar on the top, immediately below the framing and plate; those stones to be 12 inches thick, and not less than 18 inches on the bed. The Contractor is also to furnish and lay whatever stones are necessary for fixing the framing when the crane is put up.



18. The top and bottom of all *openings for sewers* which may require arching are to be clean broached in the face, beds and joints dressed true to suit the radius, to be paid for by the cubic foot extra; but no extra price to be charged for the sides of any opening under 2 feet, should any be required for culverts. The sewer called Burn Foot to be diverted as per plan; the width of which is to be 5 feet 6 inches and the height 7 feet, to be formed as per margin. The sides to be of ashlars from 12 inches to 2 feet in the bed, and averaging 18 inches in thickness, to be rough broached and set true, and charged at per cubic foot. The foundation backing to be of flat bedded stones, same as the backing of the main wall, and all set in water mortar, and charged by the cubic yard, and other sewers in the same proportion.

19. Should any parts of the *foundation* appear to the Architect to want *piling* and *planking*, the piles must be made either of well-grown beech, elm, or larch timber, from 6 inches to 8 inches in diameter, to be driven to the depth required and to range with the face of the wall. The heads to be hooped with iron for driving, and charged by the cubic foot. The sills or runners and joists to be sawn out of larch, beech, or Memel fir. The runners and joists to be notched and bolted to the bearing piles, and charged by the cubic foot, and bolts by the weight. The planking to be 3 inches thick, close jointed, and spiked to the joists with spikes 6 inches long, and charged by the superficial foot, which is to include the value of the spikes. Should sheet piling be found necessary, they must be from 3 inches to 4 inches thick, as may be considered requisite by the Architect. To be all close jointed, and properly spiked to the runners, and driven to such a depth as may be found necessary by the Architect, to be charged by the cubic foot; which is also to include the cost of spikes. The above prices also to include labour, driving, dressing, and materials; but all bolts, which must consist of the best English iron, are to be paid by the pound. The timber measured in the work, and the iron before.

20. The Contractor must also state in his offer a lump sum for

each of the principal stairs, and likewise for his small stairs, above his charge for the lineal foot of the quay wall.

21. A *temporary return wall* to be built from the new to the old wall near the Broad Chare Landing, as per general plan, which is to be 4 feet at the bottom and 3 feet at the top; built with the materials of the old wall, and the stones set with water mortar, and to be charged by the cubic yard.

22. Though the general plan of the *cofferdams* is laid down and delineated in the drawings, yet as the Contractor must become responsible for their efficacy in excluding the water, he will be allowed to make such alterations as he may think necessary, subject to the approbation of the Architect.

The cost of the quay walls is not to include the cost of the cofferdams, and it is requested that the cost of the cofferdams be made by the running yard, which is to include every expense for forming and removing the same. The piles necessary for the protection of the old quay must be charged distinctly by the foot run.

23. The Contractor must also satisfy himself respecting the *correctness of the sections* which show the bed of the river, and the old quay walls, as neither the Committee nor the Contractor can alter the contract, even if the sections should be incorrect.

24. Should any part of the specification, or any part of the drawings, not be properly understood, the explanation thereof shall be left to the Architect, whose decision shall be final and binding on the parties. All work must be performed to the satisfaction of the Architect for the time being; and should it appear at any time that the Contractor is not proceeding with the requisite expedition, or in the manner the Architect shall think proper, notice of the same shall be given him in writing; and should he, within the space of fourteen days, fail to comply therewith, the said Architect shall have power to discharge the said Contractor from the work, and take the same out of his hands. The value of the materials, and such implements or tools as the Architect may judge to be of use in the works, to be valued by him, or some other Architect or Engineer as the Committee may think proper to appoint, which value shall be paid before the works be put into the hands of any other person. The Architect shall have power and liberty, as he may see proper, to alter the thickness or depth of the walls and counterforts, or the quantity of sand, iron dust, and scar to be mixed with the lime, without the Contractor's approbation, adding or deducting from the price agreed to be paid as the same shall appear to him requisite.

STATEMENT of the Tenders for Building the Quay Wall, Newcastle-upon-Tyne.

Quay Wall founded 12 feet below the level of Low Water.

	William Brown.		John Welch and Son.		Parkinson and Gamby.		Thomas King.	
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1000 Feet of quay wall..............@	10 2 8	10,125 0 0	9 5 0	9,250 0 0	14 9 10	14,491 13 4	11 14 0	11,800 0 0
2314 Feet of cofferdam ....@	3 5 0	7,520 10 0	4 5 0	9,834 10 0	2 3 8	5,052 4 8	4 0 0	9,256 0 0
2 Main staircases......................	...	272 0 0	...	557 0 0	...	396 17 0	...	762 18 0
2 Small stair-landings..............	...	56 0 0	...	24 0 0	...	40 0 0	...	87 6 0
480 Feet of arching to 3 sewers @	0 1 3	30 0 0	0 0 4	8 0 0	0 0 8	16 0 0	0 1 3	30 0 0
81 Yards of returned wall ......@	0 16 0	64 16 0	0 12 0	48 12 0	0 16 6	16 16 3	1 0 3	82 0 3
5 Well-holes for cranes ....@	12 0 0	60 0 0	13 10 0	67 10 0	16 2 6	80 12 6	19 9 0	97 5 0
		£18,128 6 0		£19,789 12 0		£20,094 3 9		£22,115 9 3
Wall founded 10 feet below the level of Low Water.								
1000 Feet of quay wall..............@	9 5 0	9,250 0 0	8 6 0	8,300 0 0	12 18 0	12,900 0 0	10 3 8	10,183 6 8
2314 Feet of cofferdam ....@	2 15 0	6,363 10 0	3 15 0	8,677 10 0	1 17 0	4,280 0 0	3 15 0	8,677 10 0
2 Main staircases......................	...	272 0 0	...	557 0 0	...	396 17 0	...	262 18 0
2 Small stair-landings	...	56 0 0	...	24 0 0	...	40 0 0	...	87 6 0
480 Feet of arching to 2 sewers ...	...	30 0 0	...	8 0 0	...	16 0 0	...	30 0 0
81 Yards of returned wall	...	64 16 0	...	48 12 0	...	66 16 3	...	82 0 3
5 Well-holes for cranes	...	60 0 0	...	67 10 0	...	80 12 6	...	97 5 0
		£16,096 6 0		£17,682 12 0		£17,781 3 9		£19,920 5 11
Wall founded 8 feet below the level of Low Water.								
1000 Feet of quay wall ....@	8 15 0	8,750 0 0	7 4 0	7,200 0 0	11 18 4	11,925 0 0	8 10 7	8,529 3 4
2314 Feet of cofferdam ... .@	2 5 0	5,206 10 0	3 3 0	7,289 2 0	1 14 0	3,933 16 0	3 10 0	8,099 0 0
2 Main staircases	...	272 0 0	...	557 0 0	...	396 17 0	...	762 18 0
2 Small stair-landings	...	56 0 0	...	24 0 0	...	40 0 0	...	87 6 0
480 Feet of arching to 2 sewers ...	...	30 0 0	...	8 0 0	...	16 0 0	...	30 0 0
81 Yards of returned wall	...	64 16 0	...	48 12 0	...	66 16 3	...	82 0 3
5 Well-holes for cranes	...	60 0 0	...	67 10 0	...	80 12 6	...	97 5 0
		£14,439 6 0		£15,194 4 0		£16,459 1 3		£17,687 12 7

Specification for the Erection of a WAREHOUSE AND OTHER BUILDINGS, *at Newcastle-upon-Tyne, for the York, Newcastle, and Berwick Railway.* JOHN DOBSON, *Architect.* 1849.

MASON AND BRICKLAYER'S WORK.

Materials.—The *stones* for the several works to be from any quarries in the district, of good sound, ordinary, building quality for all the foundations, backing, and common purposes, and for all the exterior works to be of the very best quality, which can be procured in the neighbourhood, as to colour, texture, and durability, and such only as shall be approved by the Architect for the Company. All the stones to be quarried, so as to be set in the building upon their natural beds. No stones to be of a soft, absorbent quality, but to be free from all unsound beds, partial discolorations, streaks, or other defects. The *bricks* to be of the best quality procurable in the district, well burnt, hard, and sound, and no old bricks shall be used except such as shall be approved by the Architect or Clerk of the Works, and appropriated to such parts of the work only as they shall direct. The *mortar* to be composed of the best Fulwell stone lime, or other stone lime of equal strength and quality which shall be approved and sanctioned by the Architect, slaked, screened, and mixed with a proper proportion of clean, sharp river sand, from the mouth of the river Team, or elsewhere, of an equally approved quality. And the mortar for the rubble work and interior walls and foundations to be composed of a proper admixture of lime, sharp sand, and smelt furnace scars or iron scales. And all the mortar for every description of the works to be well ground and compounded in an approved mortar mill.

Excavations.—The Contractor to excavate the ground for the cellars, foundations, main sewer and drains, to the various widths and depths shown on the drawings. The trenches for all the foundations to be made perfectly level at the required depths, as shown upon the sections; and if any part of the strata should not be considered by the Architect or Clerk of the Works to be of a sufficient and uniform solidity, the Contractor shall excavate the same to such further depth as may be directed, and to fill up the extra depth with concrete, such extra digging and concrete to be paid for at the prices rendered in the detailed estimate. To fill in the sides of the foundation wall and over the drains, and ram the same as far up as the excavations will carry it, the remainder to be filled in by the Company. The Contractor to provide such temporary water-courses as may be necessary to drain the surface of the site during the time of erecting the buildings, and on the completion of the works to level the ground and carry away all the superfluous soil, stone, chippings, and rubbish.

Drains.—The main sewer or drains to be built where shown upon the plan, and according to the sections No. —. The stone bottoms to be roughly hewn or broached, and closely joined in cement; that for the sewer according to section to be set upon a bed of concrete, 4 feet broad and 1 foot thick. The arch to be built with bricks, 1 brick thick, of the form and dimensions shown, and filled up at the haunches with rubble or concrete. The branch drain No. 2 to have a stone bottom, to be of 9-inch brick set in cement, and covered with 6-inch stone as per section, the bottom to be rough hewn and jointed with cement solidly laid on a bed of concrete, about 3 feet broad and 2 feet thick.

Concrete.—The whole of the foundations to be built on concrete, as shown upon the drawings, and to be composed of 4 inches of the best pounded stone lime to 18 inches of gravel, and to be executed as directed by the Architect.

The *footings and foundations* to be laid at the several depths shown upon the sections, and to be of the respective widths and thicknesses represented upon the drawings, and each course of footings to project beyond the thickness of the foundations in the manner shown upon the sections for all the exterior and interior main walls, and to be composed of large random stones, not less than 8 inches thick and to average 10 superficial feet in each stone, to be roughly blocked into level beds, well bonded and filled in with mortar, and soundly rammed down to a solid bearing. The *foundation walls* to be built with good flat-bedded rubble stones, the whole to be well bedded in rough mortar, so as to make substantial and solid work, and to finish on the top with a level surface for the commencement of the dressed ashlar work. All the *footings* to the other walls for a less weight of superstructure to be of the widths shown upon the sections, and to be constructed as before described, and the foundations to be built with rubble work of good large flat-bedded wallers, well bonded and carefully filled and bedded with mortar.

Dry rubble walls.—All the external walls of the warehouses and offices to have a dry rubble wall placed on the outside at about 4 inches from the foundation walls, not less than 15 inches thick, and those round the outside of Gatekeeper's-house bank wall to be filled in with dry rubble, with a small rubble drain laid at the bottom, having a sufficient descent to the nearest drains.

Walls under Platform.—The exterior walls under platform to be of good level bedded rubble walling; that part of the exterior face above the surface to be blocked same as the main walls, the ventilating opening in the same to have branched heads, sills, and jambs, the inbands to be of the width of the wall in the usual manner, with hewn checks for window frames.

Post Stones and Walls under Columns.—The cast-iron columns to stand on post stones of 6 feet 6 inches long 2 feet 2 inches wide, and 2 feet thick, the wall underneath the same to be a solid draughted and broached wall, 5 feet × 2 feet 2 inches, and 11 feet 6 inches high, the angles to be chamfered off. The quoins to be of header and stretcher, to stand on a rough blocked foundation 8 feet at bottom by 3 feet 3 inches, and to stand on large flat bedded footings 9 feet × 4 feet 3 inches, bedded solid on the concrete foundation. *Post stones* to be placed underneath each crane, 4 feet square and 2 feet thick, with hewn top face, to be bedded on good blocked rubble 5 feet square, bonded into the foundations of the side wall, the same to have a footing course as before described bedded on the concrete.

The *steps* to cellars under platforms to be hewn, bedded on rubble same as that of the exterior foundations, which is to extend sufficiently to carry the side walls of steps, the same to be bedded on concrete; the steps to the floor under principal office to be hewn. The walls on each side to be of blocking, same as the other exterior walls; the north wall of the area to be finished with a chamfered coping 18 inches in the bed by 10 inches in thickness, on which a cast-iron handrail and balusters are to be placed. To lay a rough stone cover over the foot of the stairs, the same to be covered with a 2-inch half-rubbed Scotch flag. The steps to the porch to be clean hewn, as well as the landing up to the doorway, the walls of the porch and door jambs to be of hewn stone finishing at the top with a plain moulding, and the top to be covered with plain hewn stones neatly jointed. The *steps and landings* to the upper shipping offices and principal office to be from Prudham Quarry, the steps to be built in the wall with 15 inches wall hold, all parts exposed to the eye to be clean hewn or rubbed; the landing to be 6½ inches thick, the steps and landings to finish with malleable iron newels and balusters with a ¼-inch top rail, as per plans, other parts as directed. The steps to the coal-cellars, &c. to be rough hewn, the doorway to have rough-hewn jambs, heads, and sills.

Coal and Ash-house.—The walls of the coal-house, ash-house, &c., to be of rough blocked stone, finishing at the top with a stone skewback, and arched with 15 inches brick, set in cement, and the haunches to be filled up with concrete, and to have rough stones bedded into the same. The water-closet wall to be of 5-inch brick; the ash-pit wall to be 9-inch brick, finishing with a stone coping, rough hewn.

Sinks.—To place a stone sink in the wash-up place, underneath the principal office, as per plan, and another in the court-yard of the Porter's lodge; each to be 3 feet x 2 feet 6 inches, and to have a stench-trap and grate, to stand on stone. To place a grate and stench-trap underneath the principal office, to take off the wet; the pavement must be 4 inches below the level of the ground-floor.

Masonry of exterior Walls.—The whole of the exterior masonry, and all the masonry of the interior of the goods-warehouse and walls, exposed to the weather, to be of blocked walling, drafted and set close with stone-coloured lime; all the others to have rubble backing; the stones for the 3-feet walls to average from 9 to 11 inches in the bed, and about one-fourth to be about 2 feet, as that they may tail into the stones on the opposite side; and to lay where requested a through stone of the full thickness of the wall. The interior to be solidly filled and rendered over at each course. The base course to be of large bedded stones, rough point, broached and drafted, and to lay on a bond-stone at 6 feet apart. The quoins to be also rough point, broached and drafted, and bonded as per drawings. Arches over the gateway to be dressed in the same manner as the quoins and jambs; each course to be the full thickness of the wall, and to have rough-hewn joints. The exterior walls of principal office and Porter's lodge (shaded stone-colour on the plans) to be backed with good flat bedded rubble, and to have bond stones laid on at from 5 to 6 feet apart. All door and window openings in the exterior walls to be built with alternate inbands and outbands, the former to go through the full thickness of the wall, with reveals dressed to match the face-work, with hewn checks for frames; all the interior jambs to be neatly blocked and checked for frames. The cornices of pediments and other moulded work to be clean hewn or rubbed, as per drawings. None of the walls, nor any part of the building, will be permitted to be advanced more than one stage of scaffolding higher than the parts adjacent. The whole of any range of buildings commenced at the same time will be required, as far as possible, to be erected simultaneously.

The whole of the *chimney tops* to be of the dimensions shown upon the drawings, to have bases, shafts, and moulded cornices, as per drawings; the cornices to be cramped with lead, and a plain square fire-clay pot to be set upon each flue, 16 inches high, properly secured in grooves, and set in oil mastic.

Cornices and Projections.—The whole of the vertical joints of cornice, projections, copings, &c., exposed to the weather, to be set in oil mastic, and all sills and other projections to be *throated.* All moulded work or projections to have a sufficient bearing upon the walls. To form weathered joints where required.

Pavement.—The sunk story below the principal office (with the exception of the bedroom), and the ground-floor of Porter's lodge, to be paved with half-rubbed Scotch flags 3 inches thick; the joints to be well filled with mortar. The coal-cellar, &c., west of principal office, courtyard of Porter's lodge, and small offices, to be paved with natural-faced Scotch flags, laid on stone chippings, and floted on mortar. The air-vents round the foundations to be paved over with 2-inch roughed Scotch flags 16 inches broad. The cellars underneath the platforms to be paved with 2½-inch brick, laid on dry rubbish. The space over the passage-way of the cellars in the truck-docks to be covered over with 3-inch Scotch flags, laid on 3-inch deal, as per section, to rest on the cast-iron girders. The floor of the carriage-ways to be laid with 8 inches of freestone chippings, and covered with 4 inches of macadamized stones, until the ground has become consolidated. To level the ground round the building, and lay the roadway on the west end and north side in the same manner, on such a level as shall be directed.

Chimney-pieces and Fire-grates.—The Superintendant's office to have a chimney-piece and grate of the value of 10*l.* The other offices to have each 1 of 6*l.* value. The 4 shipping-offices to have stone chimney-pieces and grates, value 3*l.* The kitchen below the principal office to have a cast-iron grate, pot, and oven, of 14*l.* value; the bedroom adjoining to have a grate and chimney-piece of the value of 4*l.* The kitchen in Porter's lodge to have a cast-iron range of 12*l.* value. The grate and chimney-piece in Porter's lodge to be of the value of 3*l.* The 2 rooms above to have each a grate and fireplace of the value of 3*l.* The kitchen under principal office, and that of Porter's lodge, to have stone jambs and mantels; all the other fireplaces to have hearthstones, and every requisite.

All the *interior walls* of principal office and Porter's lodge (shaded stone colour on plans) to be of good rubble (excepting where bricks are necessary for fireplace backs and flues) with blocked jambs, and those shaded red to be of brick. The walling of every description to be bonded as the Architect or Clerk of the Works shall direct. The *bank walls* to be of rough broached and drafted ashlar up to the level of the chamfered course, which is to be composed of ashlars, varying from 16 inches to 2 feet in the bed, and to lay on a bond stone on each course of such length as the Architect shall direct; the same as well as the counterforts to be backed with strong bedded rubble roughly blocked, so that the wall may be levelled at the height of each of the exterior courses, and properly rendered. The quoins of the counterforts to be roughly blocked, and the counterfort walls to finish with skewbacks, and to be arched with large flat bedded rubble as per sections, solidly haunched up with concrete and rubble; the under part of the arches to be filled in with dry rubbish at the expense of the Company. A drain to be formed through the foundations of the counterforts to communicate with the main drain. The *parapet wall* on the top of the above to be of broached and drafted work as per drawings; the coping to be dowelled, run in with lead, and jointed with mastic. The *gate pillars* to be rough point, broached and drafted, with hewn cornice. To prepare all necessary post stones, guard stones, and every requisite for completing the above work. The walls for *turn tables* to be of large flat bedded rubble with footings same as the other main walls, bedded on concrete as per plans and sections. The top of the walls to finish with a course of ashlar 2 feet thick, the circular part to be 2 feet broad, and the middle pillars of the same 4 feet broad; all properly cramped or dowelled as directed.

General.—The Contractor to provide all dowels, cramps, &c., that may reasonably be required for the security of the work, to cut all grooves and mortices, point all leaden flashings with oil mastic, and complete every description of labour necessary for the Plumber, Carpenter, Smith, and Slater.

CARPENTER AND JOINER WORK.

Materials.—The whole of the *timber and deals* for the Carpenter work to be of Memel, Dantzic, or Riga, of good quality, free from sap, large knots, shakes, or other defects. All door frames, grounds, doorcases, and framed jamb linings, and all external Carpenter's and Joiner's work, such as gates, doors, windows, skylights, ventilators, and outside linings, to be executed in approved Memel deal, cut out of well-seasoned wood. All interior *Joiner's work*, except where otherwise particularly specified, to be of the best clean American yellow pine, well seasoned and cut out of dry wood.

All the *cast-ironwork* to be of good and approved quality, and all the wrought-iron work to be of the best cable bolt iron, such as shall be approved by the Architect. All *Smith work* to be done in a substantial manner, and all hardware to be strong and of the very best quality.

The *various roofs* and gutters to be executed in the manner shown on the drawings, and of the several scantlings figured and specified upon the same with the number of principals, trusses, purlins, ties, and struts, as shown upon the plan and sections, and collected and taken in the bill of quantities. All the joists to be well framed and fitted; the large roof to be rough planed and executed with the greatest care.

Joisting.—The *flooring joists*, ceiling joists, stouthings, gutters joisting, &c., not to exceed 12 inches apart, and all joisting where trimming joisting is inserted to be of the extra width of ½ inch. The *sleeper joists* of bedroom under principal office to be 4½ inches × 3 inches, laid width, 6 inch × 1½-inch *wall plates.* The *flooring joists* for the principal office and Porter's lodge to be 11 inches × 3 inches, laid on wall plates 11 inches × 3 inches, the joists to be well spiked to the plates after being properly fitted without wedging or packing up; every third joist to be spiked to the plate with spikes 3 inches longer than the depth of the joist, so as to form a complete tie from one external angle to the other. All trimming joists to hearths to be carefully framed and keyed, those on the staircase landings to be wedged or dovetailed to the principal joists as directed by the Clerk of the Works.

Lintels, 3 inches thick by the various widths required, to be laid over all the openings with only 4 inches bearing upon the walls, to serve as turning pieces to the brick relieving arches. Wooden bricks to be provided and built in where directed for fixing the Joiner's work. The lintels over the windows of the shipping office to be 4 inches thick, and to have not less than 12-inch wall holds to fix the necessary bearers under cistern. *Common stouthed partitions* to be fixed where shown on the plans and sections; the principal posts, heads, and braces, to be 3 inches × 3 inches, and filling-in stouthings 3 inches × 2½ inches, well framed and nailed. *Ceiling joists*, 3 inches × 2½ inches, fixed where required and spiked to principals as directed, and to be so fixed as to have sufficient key for the plaster work where they intersect or join any of the main timbers. *Deafening.*—Memel fillets 1½ inch × 1 inch to be nailed to the flooring joists of the ground-floor and above the principal office, and slates to be laid upon the same for the counter ceilings.

Cisterns.—To prepare and fix a cistern, 4 feet × 3 feet and 3 feet deep, above the water-closet in the principal office, to be made of 1½-inch Memel deal, roughly dressed, jointed, and tongued, and put together with large dovetails nailed each way, and to have triangular blocks nailed in all the angles.

Frames and Sashes.—To prepare and fix *deal-cased frames* with fir sunk sills and 2-inch moulded sashes to the various windows; those on the ground-floor to be single hung, and all above to be double hung with 1¾-inch double iron axle pulleys, best patent sash line and iron weights. All pulley pieces to be 1¼ inch thick; the outside linings to be of inch deal, and the inside linings of ¾-inch deal. The whole of the frames to be solidly filled with hair and lime, jointed and pointed in the reveals with mastic. All circular heads to be solid. A *sash door* to be placed at the entrance of sunk story. The *circular windows* above the archways to be filled in with weather boarding for ventilation; the same to have solid frames 5 inches × 4 inches, and uprights as directed.

Room Flooring.—The bedroom on the ground-floor, and all the other rooms, to be laid with the best well-seasoned white wood Norway battens, machine dressed, and laid with straight joints and splayings; headings laid fair and well smoothed off; each room to have a marginal batten laid round the walls and partitions, with proper bearers, to be grooved for the plinths and skirting, and mitred at the angles. The marginal battens to be well secured, and laid permanently, and the floors to be tacked down so as to admit of being easily relaid at a future time when thoroughly dried or done pining.

Doors. — The exterior doors to principal office and Porter's lodge to be 2-inch, 6-panelled, as per drawings. All the interior doors to be 2-inch, 6-panelled, with the exception of the bedrooms of the Porter's lodge, and all the closet doors, which are to be 1½ inch thick and planted, as directed. The doors in sunk story underneath principal office to be 1¼ inch battened, tongued, and beaded, and hung on rebated and beaded frames 5 inches × 3 inches. Inch battened doors with square frames, 4 inches × 3 inches, to be used for privy, water-closet, and coal-houses in sunk story, with such hinges, locks, bolts, and fastenings as are provided in the bill. All the ash-pits to have battened shutters, solid frames, and all necessary hinges and fasteners. A fanlight to be placed over the exterior and entrance doors to Porter's lodge and principal office.

Shutters.—Moulded linings, backs, elbows, and soffits; moulded shutters, 1½ inch thick, to be hung on all the windows of the ground-floor of principal office and Porter's lodge, with framed and moulded backs, elbows, and soffits. The windows on the basement floor of principal office to have framed shutters as above. All the other offices, staircase windows in principal office, and upper rooms of Porter's lodge, to have framed and moulded linings, backs, elbows, and soffits. The upper shipping offices to have plain 1¼-inch beaded linings, soffits, and seats. All the backs and elbows to finish with beaded capping and flush beaded skirting, which are not taken separately, but are included in the prices of backs and elbows, &c.

Staircases.—The stairs and landings of principal and shipping offices to have an oak handrail 3 inches × 2½ inches, as per drawings, fixed on the iron top rail above balusters, as per Mason's specification. The *staircase of the Porter's lodge* to have 1½-inch clean, yellow deal treads, and 1¼-inch risers, with 2-inch grooved and beaded or moulded wall string, with all necessary blocks and carriages; the ends of the treads and risers to be wedged into the grooved stringing with glue, the risers to be jointed and glued to the underside of the treads. Place a fir handrail against the partition to finish at the top against a square newel, and continue the handrail and balusters along the landing. The *staircases to platform* in the warehouse to be of 1½-inch deal, with strong bearers. The sides of platform adjoining staircase to be cleaded with 1¼-inch deal.

Architraves.—The doors and windows in the whole of the principal office to have single fascia architraves 7 inches broad; those in the sunk story and Porter's lodge to be 6 inches broad. All windows to have 2½-inches × ¾-inch plain grounds, that the plaster work may be completed and dry before fixing the architraves. *Back Mouldings.*—Single back mouldings to be fixed to door frames where requested. *Angle staff beads* of 1¼-inch deal to be fixed to all external angles when necessary, well secured to wooden bricks or plugs.

Closet Shelving.—To provide and fix 1¼-inch closet shelving, with proper bearers, where required. To fix in store-room and wash-up room on sunk floor 144 feet, and in the pantry of Porter's lodge 86 feet of shelving, with all necessary bearers.

Water-closets.—The one in the upper floor of principal office to be fitted up with 1¼-inch deal clamped flaps and beaded frames, 1¼-inch beaded, flush, framed risers and frames, with a mahogany seat, and bearers neatly cut to fit the apparatus; the seat and riser to be so constructed as to be capable of easy removal, to afford access to the works, as will be described. To fix plain bead and flush backs and elbows above the seat 9 inches high; also to place a 1¼-inch bead and flush door above up to the ceiling, placed about 3 inches from the wall, with the necessary frames, &c. The water-closet to sunk floor to be of plain framed deal, as above, without a framed back, but to have a 6-inch skirting above. To fit up the privy in the Porter's lodge in the usual manner. *Pipe-casings* to be of ¾-inch deal, and slightly nailed into rebated grounds where found necessary.

Skirting.—To fix (on plugs) ¾-inch deal skirting to all the offices and Porter's lodge, staircases, and passages, 8 inches high. The skirting for kitchen and bedrooms of Porter's lodge and sunk floor to be 6 inches high. *Trapways.*—To provide and fix a trapway in each of the roofs of principal office and Porter's lodge. *Gateways.*—The gateways to the sheds and entrance to be executed according to the design, with all necessary Smith work and hardware, so that the same may work well and be perfectly secure.

Hardware.—To provide and fix locks, hasps, hinges, holdfasts, sash-fasteners, and other hardware, as detailed in the estimate of quantities; the whole to be strong, and of such a quality as the Architect shall approve. *Ventilators.*—To prepare and fix cast-iron grated ventilators to openings underneath the platform, each to be 1 foot 6 inches × 3 feet 6 inches, and fixed at the time of building.

PLUMBER'S WORK.

All *gutters and flats* of the various roofs to be laid with milled sheet lead, 7 lbs. per foot superficial, of the various widths necessary to make perfect and secure work, soundly dressed down to the angles of the gutters, drips, cesspools, and rolls, and secured at all the drips and joints in the most approved and workmanlike manner, finding all labour, solder, holdfasts, wall-hooks, and every requisite for perfecting the various works in this department, according to the quantities provided in the detailed estimate. To provide and fix to all the *ridges, sunk gutters,* and *linings* to skylights, 6-lb. lead, and all flashings, where required, with 5-lb. lead; gutters to be laid with a fall of not less than 1½ inch to 10 feet, and all lead to go not less than 12 inches underneath the slates; *drips* to be not less than 2½ inches. Previous to laying down the lead, if any imperfection be found, the same to be reported to the Clerk of the Works, and to be altered and rectified before it is laid. The bottoms of all cesspools to be covered with loose *copper perforated covers.* To convey the water into the *cast-iron down pipes and column heads* with 4-inch leaden pipes, properly soldered into the bottom of cesspools, as directed; also to convey the water from the bottom of down pipes and column heads into the drains, with 4-inch cast-iron bands, socket-joints, &c.

SLATER'S WORK.

The shed roof to be laid (on deal) with the best duchess slates from the quarries of the old *Delabole Slate* Company, bedded on close boarding, and each slate to be double nailed with copper nails. The remainder of the roofs to be laid on laths and well pointed. The whole of the work to be executed in the best manner, correctly jointed and laid with 2½-inch lap, so as to make the whole perfectly water tight. After the work is examined on its completion, all damaged or broken slates to be made good.

PLASTERER'S WORK.

The plaster work to be executed with the best *Fulwell stone lime* or any other stone lime of equal quality, the lime to be slaked and prepared to the satisfaction of the Architect immediately after the building is commenced. The laths to be of Memel, and of such a length as shall be approved. All the ceilings and walls to be of 3 coats, and the walls stone-finished where requested. To render in 1 coat behind shutters, backs, elbows, fixed linings and skirtings, and to lath and plaster in 1 coat behind the skirtings and plinth of timber partitions. Each of the offices, staircases, passages in the principal office, and 1 room in the Porter's lodge, to have a *plain run cornice* 6 inches girth. All angle beads to be properly quirked. Counter ceiling to be laid under the ground-floor of the principal office and above the Directors' office, and after the same is dry to run in with plaster of Paris.

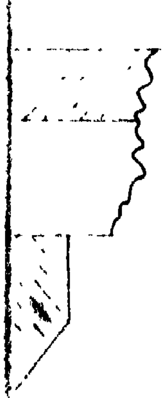
Conditions and Specification of the various WORKS *required to be done in the Construction of the* NEWCASTLE-UPON-TYNE JUNCTION RAILWAY STATION. JOHN DOBSON, *Architect.*

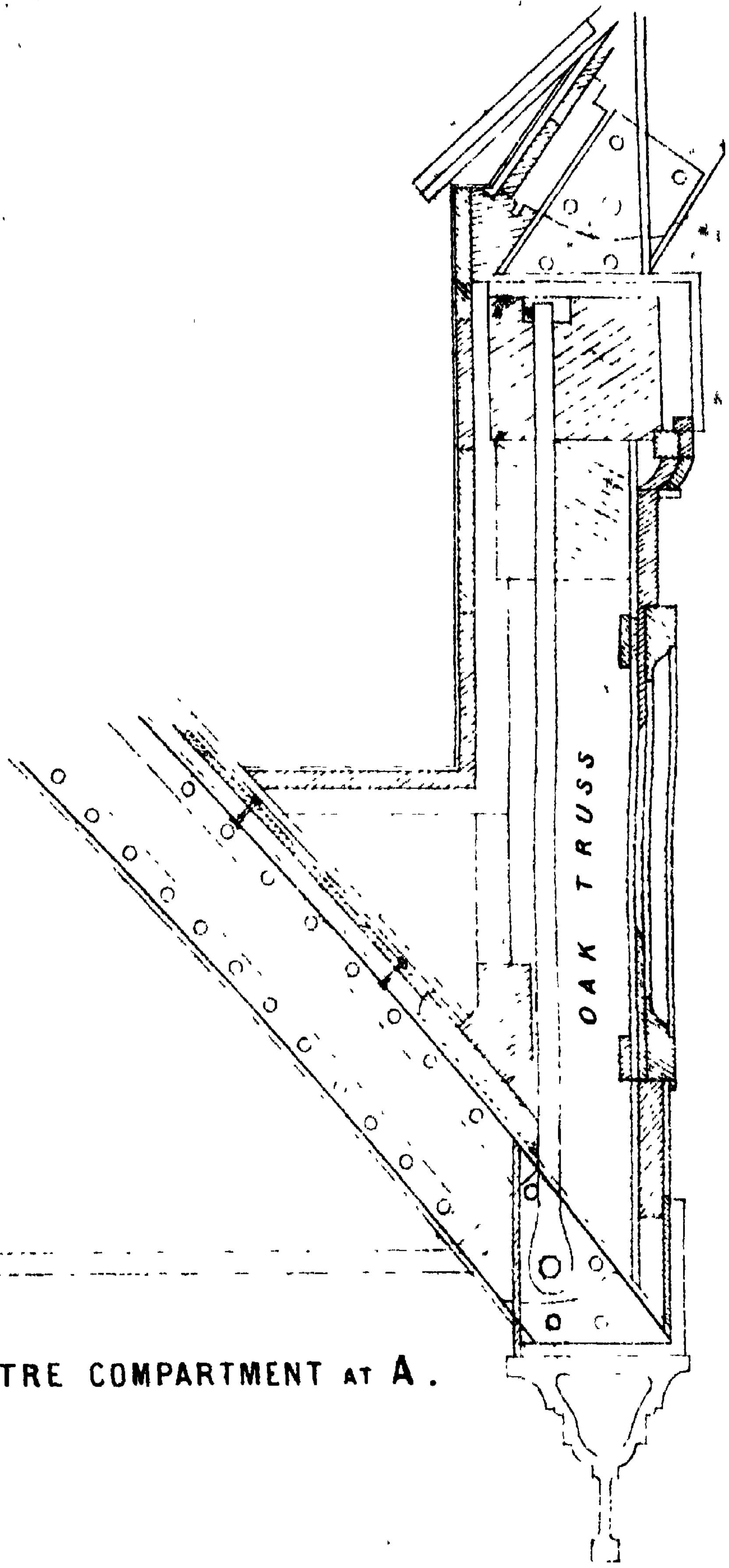
MASON AND BRICKLAYER'S WORK.

Materials.—The *stones* for the several works to be from any quarries in the district, of good sound ordinary building quality for all the foundations, backing, and common purposes; and for all the exterior works to be of the very best quality, which can be procured in the neighbourhood, as to colour, texture, and durability, and such only as shall be approved by the Architect for the Company. All the stones to be quarried so as to be set in the building upon their proper natural beds; no stones to be of a soft absorbent quality, but to be free from all unsound beds, partial discolorations, streaks, or other defects. *Bricks.*—The bricks to be of the best quality procurable in the district, well burnt, hard, and sound, and no old bricks shall be used, except such as shall be approved by the Architect or Clerk of the Works, and appropriated to such parts of the work only as they shall direct. *Mortar.*—The mortar to be composed of the best Fulwell stone lime, or other stone lime of equal strength and quality, which shall be approved and sanctioned by the Architect, slaked, screened, and mixed with a proper proportion of clean sharp river sand, from the mouth of the river Team, or elsewhere of an equally approved quality. And the mortar for the rubble work and interior walls and foundations to be composed of a proper admixture of lime, sharp sand, and smelt furnace scars or iron scales. And all the mortar, for every description of the works, to be well ground and compounded in an approved mortar mill.

Excavations.—The inequalities of the surface upon the site of the station will be removed at the cost of the Company to the depth of one foot below the level of the platform, which level is the datum from which the various depths of the excavations are calculated. The Contractor to excavate the ground for the cellars, foundations, main sewer, and drains, to the various widths and depths shown upon the drawings, and the entire area under the rooms which have sleeper walls, and under the platform of the shed, to the depth of 2 feet below the datum level, and remove all the remainder of the soil, as per sections, to a depôt to be found by

LE RAILWAYS.





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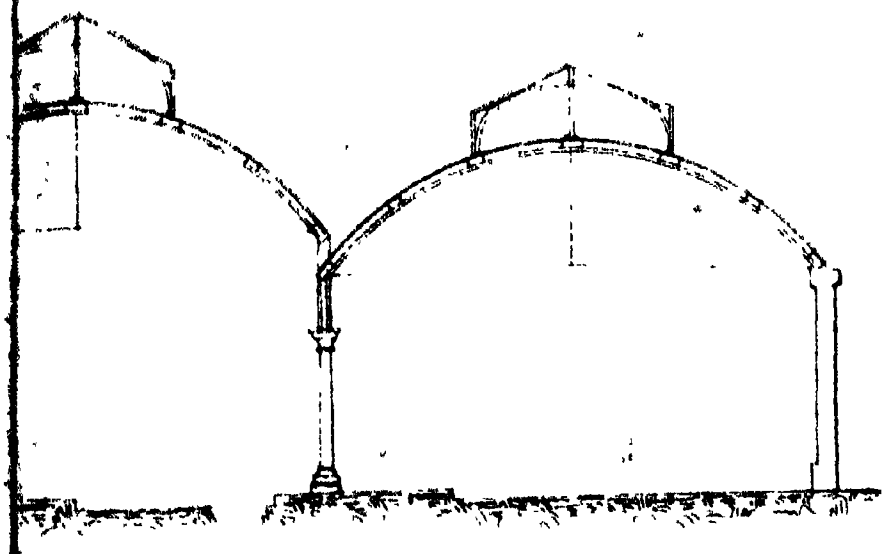
CENTRE COMPARTMENT AT A.



TICO & SHEDS.

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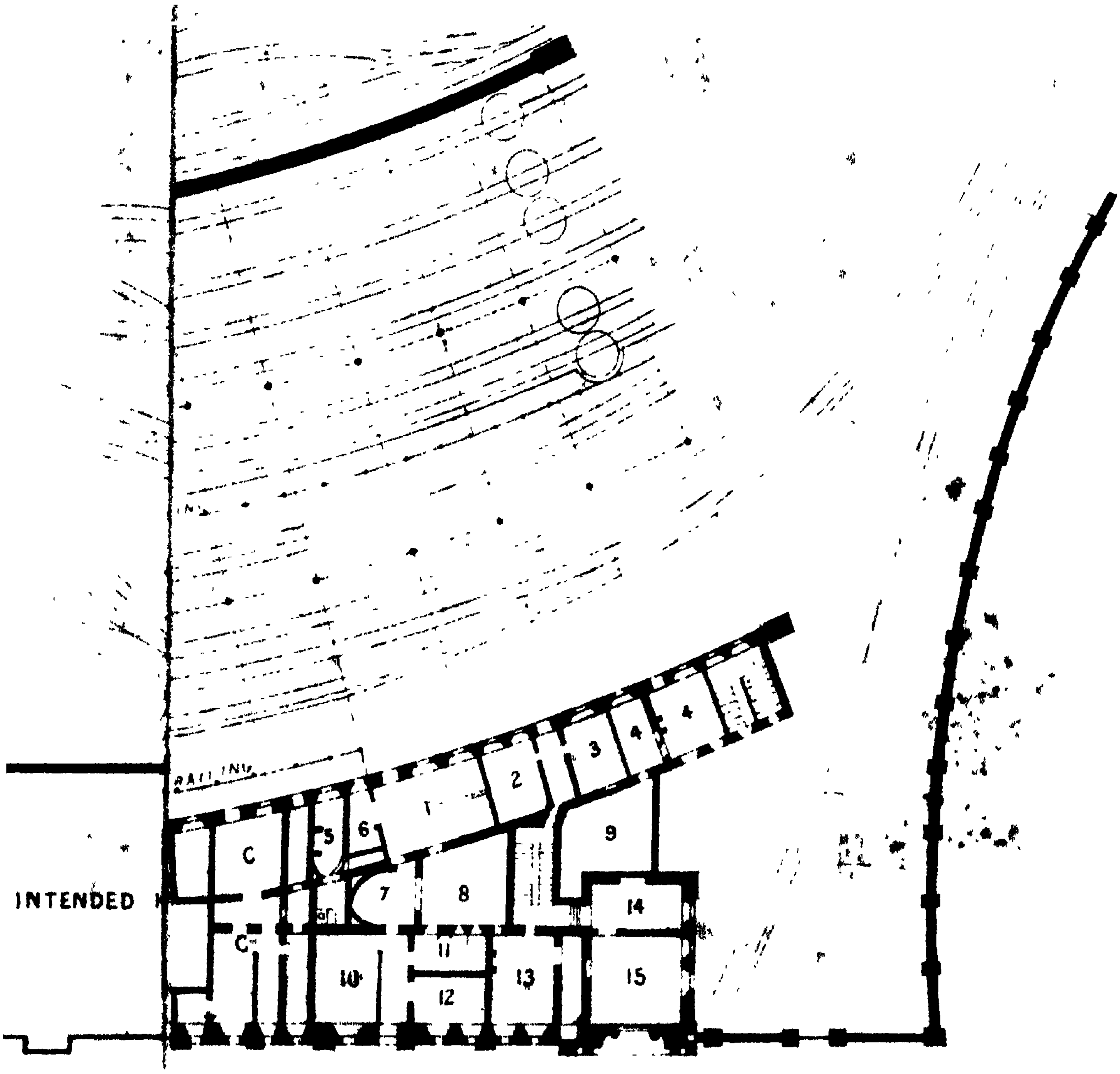

J. Dobson, M.I.B.A. Archt

Scale

Vincent Brooks [illegible]

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ENGINEERS OFFICE
LADIES WAITING ROOM
GENT'S Do Do
LOBBY
COURT
STORE ROOM
GENERAL WAITING ROOM
2ND AND 3RD CLASS LADIES ROOM

the Contractor. The trenches for all the foundations to be made perfectly level at the required depths, as shown upon the sections, and if any part of the strata should not be considered by the Architect or Clerk of the Works to be of a sufficient and uniform solidity, the Contractor shall excavate the same to such further depth as may be directed, and fill up the extra depth with concrete. Such extra digging and concrete to be paid for at the prices rendered in the detailed estimate. To fill in the sides of the foundation walls, and over the main sewer and drains, with dry rubbish, and ram the same firm up to the surface level. The Contractor to provide such temporary watercourses as may be necessary to drain the surface of the site during the time of erecting the buildings, and on the completion of the works to cart away all the superfluous soil, stone chippings, and rubbish.

Drains.—The *main sewer and drains* to be built where shown upon the plan No. 2, and according to the sections Nos. 1, 2, 3, and 4, shown upon the drawing No. . The *stone bottoms* to be roughly hewn, or broached, and closely joined in cement, that for the sewer according to section No. 1, to be set upon a bed of concrete 5 feet broad and 1 foot thick. The *arch* to be built with bricks 1 brick thick set in cement, of the form and dimensions shown, and filled up at the haunches with rubble masonry. The *principal drain*, shown on section No. 2, to be built in the same manner as described for the sewer, with stone bottom and brick arch in cement; the *stone bottom* to be set upon a bed of concrete 4 feet broad and 1 foot thick, and the haunches of the arch filled in with rubble masonry. The *branch drain*, No. 3, to be formed with 2 courses of stones, and the area of the drain cut out of the solid; the bed and heading joints to be roughly hewn and set upon a bed of concrete 3 feet broad and 1 foot thick. The *small branch drain*, No. 4, to be formed and set in the same manner, with 2 courses of stones 18 inches broad by 9 inches thick, and the area of the drain cut out of the solid, and the bottom course to be set upon a bed of concrete 2 feet broad and 9 inches thick. And, in all parts where the main sewer or arched drains cross or intersect the lines of the buildings, the space from the crown of the arch to the bed of the footing course to be filled in with rough concrete, and well rammed through the thickness of the foundations.

To build *5 vertical shafts or staples* where directed, 15 inches square inside, with 9-inch brickwork in cement, from the crown of the arch of the main sewer to within 2 feet of the surface of the pavement, and cover each staple with a rough stone, 2 feet 6 inches square, and 6 inches thick, rough broached on the bed.

Footings and Foundation Walls.—The *footings and foundations* to be laid at the several depths shown upon the sections, and to be of the respective widths and thicknesses represented upon the drawings, and each course of footings to project beyond the thickness of the foundations, in the manner shown upon the sections, for all the exterior and interior main walls, and to be composed of large random stones not less than 8 inches thick, and to average 10 superficial feet in each stone, to be roughly blocked into regular and level beds, well bonded, and filled in with mortar, and soundly rammed down to a solid bearing. The *foundation walls* to be built with good flat bedded stones, averaging not less than 4 feet superficial in the bed, nor less than 6 inches in thickness, to be roughly blocked and hammer-dressed on the face and end joints, well bedded and bonded, so that a very limited quantity of fillers will be permitted to make up the levellings, and no pinning stones to be used. The whole to be well bedded in mortar, so as to make substantial and solid work, and to finish on the top with a level surface for the commencement of the dressed ashlar work. All the *footings* to the other walls, for a less weight of superstructure, to be of the widths shown upon the sections, and to be constructed as before described. And the foundations to be built with rubble work of good, large, flat bedded wallers, well bonded, and carefully filled and bedded with mortar.

Area and Cellar Walls.—The whole of the external basement walls to be built with rough blocked work, and the internal walls of good roughly-blocked rubble work, of the thicknesses shown upon the plans and sections, with rough-hewn skew backs built in where required for the springing of the cellar arches, to be well filled and bonded, and neatly flush pointed.

The door and window openings to be built with inbands and outbands, with rough hewn reveals and checks to receive the sash frames; the interior window jambs to be splayed, and the jambs and quoins to be neatly blocked up and well bedded, and to have strong stone heads and lintels where necessary.

Dry Rubble Walls.—All the external walls of the areas and cellars to have a dry rubble wall not less than 8 inches thick, filled in on the outside, and a small rubble drain laid at the bottom, with a sufficient descent to the nearest drains, into which a trapped opening is to be formed as will be directed.

Sleeper Walls.—The sleeper walls and bearing walls, for flagging, to be built as shown upon the plans, of good rubble masonry, with a footing course 4 inches thick of large flat bedded wallers, projecting 3 inches on each side beyond the respective thicknesses of the walls; the sleeper walls to be 16 inches thick, and the bearing walls 18 inches thick, and 2 of the bearing walls of the shed to be 3 feet high, to admit of access to the main water pipe, which will be laid between them; and openings are to be left in the bearing walls, and 2 cast-iron doors or gratings, 2 feet by 18 inches, to be provided as will be directed for ventilation and access to the pipes under the platform. The front bearing wall, under the border of the platforms, to be 2 feet thick, faced with clean hewn ashlar work. Small air drains to be made through the walls where directed, and 60 cast-iron perforated plates, 6 inches diameter, to be fixed in the walls, and 16 ventilators in the platform where directed.

The spaces under all the slabs and hearths in the rooms which have sleeper joisting are to be built up with solid rubble work to the proper level for bedding the slabs and hearths.

Post Stones.—To prepare and set 54 post stones for the iron columns in the shed, 2 feet 6 inches square, and 21 inches thick; and to build footings and foundations in the manner specified for the main walls, and as shown upon the sections; and the cast-iron rain-water pipes, provided by the plumber, are to be built in the foundations, and let in through the post stones, and the drain carefully made good to the end of the pipe. Hewn post stones, 2 feet square and 1 foot thick, upon proper foundations, to be set under the columns in the station and hotel, where required.

Interior Walls.—The interior partition walls to be built of the several thicknesses shown upon the plans and sections, of good rubble work, well filled and throughed, having at least one through stone in every superficial yard of walling. The quoins and door jambs to be neatly blocked, and the face joints of the walls dashed fair with mortar. The jambs and backs of the fireplaces to be lined with fire bricks, and the flues to be carried up with fire-clay linings, 12 inches diameter, and 1 inch thick in the rim, set fair and built in the walls as the work proceeds, and to finish on a level with the stone work at the chimney tops.

Interior Brick Walls.—Brick partition walls to be built of the several thicknesses shown upon the plans, and carried up to the heights shown upon the sections, upon stone footings and foundations, as before described. The inside of the external walls to have half-brick linings where shown upon the plans, with an air vent or cavity between it and the inner face of the stone wall, properly bonded at such intervals as will be directed.

Brick Arches.—All the door and window openings in the stone walls to have brick relieving arches, 9 inches thick, with stone rough hewn or broached skew backs, and to be set in mortar. And relieving arches, half-brick thick, to be turned over all the openings in the brick walls, springing from properly formed skew backs. The whole of the *cellar arches* to be built with bricks set in cement, of the several thicknesses shown upon the sections, springing from proper stone skew backs set in the walls, to be close jointed at the intrados, and neatly pointed with cement, and in all parts well and carefully bedded. The arches springing from the girders to commence with a course of moulded springer bricks or hewn stone work, made to bed solid on the flange of the girders, and to be set in cement; those to the small arches over the passages to be half a brick thick, and all the other arches of the thicknesses shown on the sections; and the whole of the haunches to be filled up to the level of the crown with good rubble masonry or rough concrete. An arch, 1 brick thick, in cement, to be turned over the common stone stairs at the Carlisle end, with iron tie bolts as will be directed, to support the isolated chimney shafts above the same.

Masonry to the Arcades and Portico.—The whole of the plain and ornamental work in the arcades and portico to be executed according to the plans, elevations, and sections, with the best selected stone and superior workmanship, and the whole of the surfaces exposed to view to be clean rubbed, the joints and beds to be truly squared and set close with fine stone-coloured mortar. The *plinth and dado* to be each built in 2 courses in height, with stones averaging 2 feet in the bed; the interior of the dados of the arcades to be built with a rough blocked middle wall and cavities, as shown on the section, and the spaces to be covered with rough broached stones 6 inches thick. The *base moulding* to be 2 feet broad in the bed, and the moulding to be worked to the detailed drawing and clean rubbed. The *pedestal or dado cornice* to be worked as shown, that between the arches of arcades to be in 2 stones in width, the top beds of this and the balustrade cornice to be weathered and the joints carefully set in mastic, and those parts which form the beds for the column and pilaster bases to be built solid throughout and dressed fair on the top. The *ashlar work* generally of the arcade and portico pillars, and the north wall of the station, to be 18 inches high in the courses, and to average 15 inches in the bed, independent of throughs, which are to be inserted as will be directed to bond and secure the work in the most perfect manner; the whole of the interior of the pillars and abutments within the ashlar facing to be filled in with blocked work 2 courses in height to 1 course of ashlars well filled and bonded and bedded in mortar and levelled up to the lines of the ashlar courses. And the north wall of the station to be backed with blocked work in the same manner, making out the walls to the thickness shown on the sections.

The *plinths and the bases of the columns and pilasters* to be each of one stone, dressed, moulded, and clean rubbed. The *attached columns* to be worked and set in courses corresponding with those of the ashlar work, and alternately bonded in the walls, the header to be tailed in at least 18 inches within the face of the wall, and the alternate stretcher to be inserted three quarters of an inch within the face line of the ashlars in order to break joint. The courses of the *isolated full columns* to be of the height of 2 courses of ashlars, or 3 feet high, correctly worked and jointed, and to be set with a cast-iron dowel, 1½ inch diameter and 3 inches long in each joint, previously dipped in oil. The *caps* to the whole of the columns and pilasters to be worked according to their respective details.

All the *jambs and arches* to be worked and bonded in the manner shown on the Drawings Nos. 8, 14, &c.; and all the archivolts, imposts, ornamental key stones, spandrils, niches, and balustrades, and also the interior cornice to the portico, and architraves and dressings to the doors and windows, worked according to the several details, and such further full-sized drawings and directions as will be given. The *groin, ceilings, and lanterns* over the arcades to be executed according to the Drawings numbered 19, 21, and 24, and such further details and directions as will be given. The main transverse arches in the arcades to be strengthened and secured with cast-iron ties, bolts, and keys, as are shown upon the detail No. 16. And the haunches to be built up with rubble masonry, or rough concrete, to the rake of the roof and gutters, as shown on the section, and to finish with a flat brick pavement, bedded and jointed in mortar to form the bed of the slate covering and lead gutters.

The *external architrave* of the main entablature to be dressed and set as shown on the drawings, and to be in 2 stones only over each of the front arches of the arcade, 4 feet in the bed, and the projecting soffit to be clean rubbed, the stones over the external end arches of the portico to be 4 feet 9 inches in the bed, and in all parts where the entablature breaks over the columns, the front architrave to be in 1 stone over the coupled columns 2 feet 6 inches in the bed, and 2 of those stones to be 4 feet in the bed. The ordinary architrave over the arches of the portico to be 2 feet in the bed, and the interior architrave to be 2 feet 9 inches in the bed. The long stones over the front arches of the arcades to be crampt at the joints with iron dovetailed cramps 15 inches long, 4 × 1 inches, and run in with lead. The *main frieze* to be 15 inches in the bed, and to be well dressed and set according to the drawings and details. The *main cornice* to be worked and set in 3 courses, according to the drawings and details, properly breaking joint, and well bonded, and the vertical joints of the upper course to be set in mastic, the top to be hewn and weathered with raised rolls at the joints. The *attics or battlements* to the portico and arcades to be executed as shown on the drawings, with ashlars averaging 12 inches in the bed, with inbands where requisite, from 2 feet 3 to 3 feet in the bed, the whole to be properly bonded with the blocked backing, and the face of the blocked work to be fairly broached or rough hewn, and the joints neatly pointed.

Masonry to the Station.—The whole of the walls coloured *brown* on the plans to be of stone, and those coloured *red* to be of bricks. All the external masonry exposed to view on the north front, including the clock tower on the east, and the return at the west end up to the termination of the main entablature of the arcade, the side walls of the main entrance, and the south wall fronting the shed up to the cornice, to be of rubbed ashlar work, with such moulded work and dressings as are shown upon the drawings and provided for in the detailed estimate. The interior of the entrance to be executed with clean rubbed columns, the shafts to be in 1 stone each. Pilasters in courses, vaulted stone arches, and such further decorative masonry as are shown on the various drawings and details, and the haunches of the arches to be filled up to the level of the crown with rubble masonry or rough concrete.

And all the other external walls, of the several thicknesses shown on the plans, are to be of ordinary drafted and broached *ashlar work*, set in fine stone-coloured mortar neatly pointed, with rough blocked backing in 2 or 3 courses to the height of the ashlars, well filled and bonded, using no pinning stones in the face, and as little interior filling as the work will admit of, and to be dashed with mortar on the internal face where not lined with bricks.

All the *door and window openings* in the external walls to be built with alternate inbands and outbands, the former to go through the full thickness of the walls, with the reveals dressed to match the face work, and checked for the frames, and all the internal jambs to be blocked and rough broached.

The *cornice of the south wall* of the station under the shed roof to be of 1 stone in height, moulded and rubbed as per section, and a channel to be cut on the top, as will be directed, for the course of the rain water, and the tops of the window sills above these gutters to be cased with Valentia slate, grooved into the reveals and set with oil mastic.

No wall, or part of any building, will be permitted to be advanced more than one stage of scaffolding higher than the other parts adjacent to it, but the whole of any range of buildings commenced at the same time, will be required, so far as possible, to be erected simultaneously.

The *south wall of shed* to have footings and foundations as shown upon the sections, of the same description of masonry as before described for the walls of the station, and above the surface level to be built with 12-inch drafted and broached ashlars, from 8 to 9 inches in the bed on both faces of the wall, which is to be 3 feet thick, and filled in with good sound rubble work, and the quoins at each end of the wall to be built with alternate headers and stretchers, the headers to go through the full thickness of the walls and an ashlar closer to be set between the ends of the stretchers, well joined, so that each end may present a complete drafted and broached ashlar face, and both faces of the wall to be built at the same time, with a through stone going through the full thickness of the wall, at not more than an average of 6 feet apart, breaking bond with the throughs on the former course ; the face joints to be set close, with fine stone-coloured mortar, and no part of the wall to be carried up higher than 2 courses above any other part while building. A *clean hewn and moulded cornice*, according to the detailed drawing, to be set upon the inner face of the wall, and to be returned at the ends as will be directed.

Chimney Tops.—The whole of the chimney tops to be of the dimensions shown upon the drawings ; to have hewn ashlar bases and shafts, and moulded and weathered strings and cornices, as shown upon the detailed drawings, the cornices to be crampt with iron cramps, run in with lead ; and a plain square fire clay chimney pot to be set upon each flue, 16 inches high, properly secured in grooves, and set in cement.

Ornamental Projections.—The whole of the vertical joints in the cornices and other moulded work and projections exposed to the weather, to be weathered on the top, and set and pointed in oil mastic ; and all sills or other projections so exposed, are to be throated, so as to throw off the wet ; and all such moulded works and projections are to have a sufficient bearing upon the walls, as will be directed by the Clerk of the Works.

Interior Mason Work.—To provide and set clean rubbed stone columns and pilasters, as shown on the plan, at each end of the first-class refreshment room, the bases, shafts, and capitals to be of one stone each, to be of the best selected fine grained stone, and correctly worked according to the details. The walls forming the foundations of the columns and pilasters to be of sound well built blocked work, and a stone relieving arch to be turned over the opening above the columns at the west end of the refreshment room, the thickness of the arch to be 18 inches, and the length of the stones to be 3 feet, going through the full thickness of the walls, with proper skew backs, and the whole to be rough broached or hewn with radiating beds. The space between the columns at the west end to be built up solid to the height of the dado slab, and that at the east end to be built up with a 9-inch brick wall, with half brick partitions to form dwarf cupboards in the bar and to be covered over with $1\frac{3}{4}$ Caithness flags as a bed for the marble slabs.

To lay a clean rubbed and mitred margin of $1\frac{1}{4}$ Caithness flags round the first-class refreshment room, 16 inches broad, and 2 rubbed *slabs for the stoves*, 7 feet × 4 feet, and 4 inches thick, set upon solid brick foundations, with fire-brick linings to the flues, and to build double arched flues to the north wall, with a 9-inch protecting arch over, as shown upon the detailed section, with fireclay linings in the flues, and to provide a man-hole to afford access to each pair of double flues, 1 in the passage and the other in the Waiters' lobby, with a small double iron door to each flue, and a brick-built area with stone covers under the boarded floors.

Marble Slabs and Dados.—To provide and set inch polished vein marble dado, plinth, and surbase round the walls of the first class refreshment room, as shown on the detailed drawing, and inch polished vein marble slabs in the windows and in the spaces between the columns, rounded on the edge to match the plain surbase across the piers, the fascia of which to be 3 × $1\frac{1}{4}$, and a narrow marble plinth to be fixed above the slabs in the windows and between the columns, according to the quantities provided in the detailed estimate. To provide and set inch vein marble slabs in the several washing places 2 feet broad, with a marble plinth 12 inches high round the backs and elbows of the slabs, which are to be set upon proper bearers as will be directed, and to cut holes to receive the basins, and such holes as may be required for the Plumber work; and to provide and set a marble slab in the pastry, bedded on Caithness flags upon a wood frame.

Staircases.—All the basement and cellar steps, and stairs to the store-house, at the Carlisle end, to be clean hewn, and set with a lap of 2 inches, with 7-inch hewn landings, as shown upon the plans; the back staircase in the tower to have square rubbed steps and skirtings, and the outside steps to all cellars to be rough hewn and set on walls. The abutments and arch under landings of staircase to offices, &c., east of the entrance, the north face of middle wall, the abutment and arch to carry the second flight of stairs, the pedestals, steps, and mouldings, to be of the best selected stone, clean rubbed. The risers of all the steps and landings to be sunk and moulded according to the various details, and to have clean rubbed raking soffits, properly back jointed and secured, as will be directed, and to lay 7-inch landings in the passages and galleries, where directed, with joggle joints and sufficient bearing on the walls, with moulded cantilevers, where required. To let in the iron balustrades to the stairs and landings, and run the same with lead to all the staircases and landings. The raking soffits of the principal staircase in the hotel to be moulded according to the detailed drawing, and all the other stone-work connected with the staircase to be clean rubbed and moulded, according to the several detailed drawings; the joints of the landings to be joggled, and a plain rubbed skirting to be fixed to the stairs, and landings adjoining.

Parcel Offices.—The abutments, piers, and arches between the parcel offices to be of clean rubbed ashlar stone, according to the Drawing No. 36.

Stone Benches.—Rubbed stone benches, 5 inches thick, with a moulded edge, to be set upon wood frames in the ticket office, as will be directed.

Pavements.—All the courtyards, cellars, areas, and paved floors in the basement and ground-floor rooms, urinals, and passages to water-closets, and in the several arched passages, safes, and lobbies, to be laid with 1½ to 1¾-inch half rubbed Caithness flagging of the best quality, with sawn joints, to be well bedded and close jointed in fine mortar. The best and most perfectly rubbed flags to be selected and laid in the arched passages and principal rooms.

The coal and ash houses, oil cellars, &c., may be laid with 1¾-inch natural faced Caithness stone, with sawn joints, or with rough hewn Newcastle flags 3½ inches thick.

The platforms in the shed to be laid with 3-inch Caithness landings, 5 feet long and 2 feet 6 inches and upwards in width, with rubbed faces and sawn joints, with a border stone on the front wall of the platforms 4 inches thick and upwards, with tooled faces and sawn joints, and the front edge rounded.

The outside footpaths and flagging in the arcades, portico, and entrances, to be laid with 3-inch tooled Caithness flags, with sawn joints, and a border-stone 12 inches × 6 inches; the foundation for the flagged footpaths, and other flagging not laid on bearing walls, to be laid upon concrete about 6 inches thick.

The flagging in the entrance to the hotel, and at the foot of the stairs in the station, to be of the best freestone, to match the steps, to be $3\frac{1}{2}$ inches thick, clean rubbed, and close jointed, and to be well bedded and jointed in fine mortar. The landings of the platforms, and the flagging in the entrance, to be carefully jointed in mastic.

Carriage Pavement.—A hewn channel stone, 2 feet 2 inches broad and 9 inches thick, with a channel cut for the rain water, to be set upon a good rubble foundation, in the arcades and portico, and 12 cast-iron grates and traps to be provided and let in, and small staples or shafts to be formed to convey the water into the branch drains. The carriage-ways in the arcades and portico to be well paved with the best granite cube 9-inch paving stones, upon a foundation of broken freestones, stone chippings, and gravel, well bedded, laid, and rammed, and grouted with quick lime, fine sharp gravel, and sand; the finished surface line to be formed as will be directed.

Urinals.—The urinals to be fitted up with stone troughs, according to the detailed drawing, which are to be built in and secured in the walls where shown, and to be lined with rough plate glass, neatly fixed and bedded in white lead; No. 20, slate partitions, 5 feet 6 inches high, 2 feet 6 inches broad, and $1\frac{1}{4}$ inches thick, to be clean rubbed, dressed, and set; and 32, dwarf partitions, of rubbed slate, 2 feet 6 inches high, and 18 inches broad, to be set with cement as will be directed; and the walls above the troughs to be lined, 2 feet high, with thin rubbed slate, neatly fitted and set, and pointed with cement. The urinal at the east end of the second class refreshment room to be fitted up with 6 rubbed stone partitions, 6 feet 3 inches × 2 feet, and 6 inches thick, with moulded stone caps set with cement, as will be directed, to support the roof.

Chimney Pieces and Stove Grates.—To provide and set clean rubbed stone slabs and hearths to all the fireplaces in the rooms and offices in the hotel and station-house, of such dimensions as may be required. And to provide and set such marble and stone chimney-pieces, stove-grates, pots, ovens, ranges, and cooking apparatus, for the rooms, offices, and kitchens, as will be directed, which, including firebricks and other materials and labour required to set the same, shall be of the value of 881*l.* 10*s.* for the station, and of the value of 490*l.* 10*s.* for the hotel, according to the particulars given in the detailed estimate.

External Walls of the Hotel.—The foregoing specification applies generally to the works in the inn as well as to the station, with the exception of the external walls, which are to be built with ashlar stones of the best quality, 18 inches high in the courses in the basement story, and from 12 to 14 inches in the bed, narrow drafted and point broached. On the ground-floor story with clean rubbed rustic work, in courses 16 inches high and from 10 to 12 inches in the bed; and on the upper stories with clean rubbed plain ashlar work, 13 inches high in the courses and from 8 to 9 inches in the bed, with a sufficient number of inbands and throughs in each story, as will be directed; and the whole to be backed with rough blocked work, as before specified, according to the several thicknesses shown upon the plans and sections. The quoins of the upper stories, and the staircase window jambs and arches, to be rusticated; and the various cornices, architraves, window sills, panels, balustrades, battlements, mouldings, keystones, corbels, and other ornamental work, to be executed in the best manner, as shown upon the 3 elevations of the building, and as taken in the detailed estimate.

Interior Masonry of Hotel.—The interior face of the walls in the entrance to be finished with clean rubbed ashlar work, and dressed upstart jambs and stone heads for the doors and side lights clean rubbed and checked to receive the frames, with 2 carved and moulded trusses upon the jambs 4½ feet long, dressed according to the detailed drawings; and a moulded stone architrave and cornice, clean rubbed, to be set round the entrance-lobby. The angles of the jambs and intrados of the arched entrance to be moulded as shown. The whole of the interior masonry to the columns, pedestals, and entablatures to the staircase, to be executed according to the detailed drawings, and as given in the detailed estimate; and the landings and stone stairs and skirtings to be done in the manner before specified, and 8 carved and moulded cantilevers 7 feet long to be dressed and set under the landings.

Coal Lift.—Brick walls to be built, as shown on the plans, to enclose the machinery for a coal lift from the basement to the different stories. *Wine Bins.*—Wine bins to be built as shown upon the basement plan, with 9-inch brick walls, and 3-inch hewn stone shelves, as provided in the detailed estimate. *Palisading.*—To provide and set a clean rubbed curbstone, for the palisading on the area wall of the north front, 14 inches × 10, according to the detailed drawing, and an iron palisading, as will be directed, of the value of 25*s.* per lineal yard, let in and run with lead; and to set a flat hewn coping, 18 inches broad and 6 inches thick, upon the east and south area walls; and to provide and fix a light dwarf iron railing, as will be directed, of the value of 6*s.* per lineal yard, with newels where necessary, and a grate and fastenings at the top of the area steps, of the additional value of 20*s.*

Outside Flagging.—A flagged footpath to be laid on the outside of the palisading on the north front, which, including the border stone, is to be 12 feet broad; the flagging to be of Caithness stone, 3 inches thick, chisseled on the face with sawn joints, laid upon 6 inches of concrete, well bedded and jointed in fine mortar, the border-stone to be 12 × 7, of the same description of stone.

The above, and all other works provided in the estimate, and shown or implied on the drawings, to be executed and completed in a sound and workmanlike manner to the satisfaction of the architect.

CARPENTER AND JOINER'S WORK.

Materials.—The whole of the carpenter work to be executed with Memel, Dantzic, or Riga timber of good quality, free from sap, large knots, shakes, or other defects; all the door frames, door and other grounds, door casings, and framed jamb linings, and all external joiner work, such as doors, windows, skylights, ventilators, and outside linings to be done with Memel deals, well seasoned and of good quality, and all the internal Joiner work, except where otherwise particularly specified, to be of the best clean American yellow pine, well-seasoned. All the cast iron work to be of good and approved quality, and all the wrought iron work of the best cable bolt iron, such as shall be approved of by the Architect for the various purposes to which they are intended to be applied.

Roofs.—The various roofs and gutters to be executed in the manner shown upon the sections and other detailed drawings, and of the several scantlings figured and specified upon the same, with the number of principals, trussed ribs, ties, and struts as are shown upon the plans and sections, and collected and taken in the bill of quantities; all the joints to be well framed and fitted, and secured with iron strap ties and bolts, such as are provided for them in the detailed estimate. Templates 2 feet 6 inches long 12 × 3 to be laid under the ends of all the tiebeams, and 11 × $\frac{3}{4}$ sarking boards to all the hips, ridges, skylights, and chimney collars.

Portico Roof.—The roof of the portico to be constructed as shown, with fourteen framed trusses with wrought-iron suspension bars 4 inches by 2, and cast iron shoes, as will be directed, of the weight of 3 cwt. each, the suspension bars to be joined in the manner shown, and secured with a shackle bolt 1½ inches square, the extreme ends to be formed with a strong threaded screw 2¼ inches diameter, and secured with a nut 4½ inches square and 3½ inches thick. The main timbers, struts, and braces of the trusses, and longitudinal ties and struts, to be of the several scantlings figured on the sections, and to have inch round iron suspending and tie bolts where shown, and twenty-four iron caulkings between the top bearer and abutment piece 12 inches long and 2 inches square; twenty-eight blocks 12 × 6 and 2 feet long to be fixed on the tie beam of each truss to carry the longitudinal tie. A wall plate 12 × 4 inches to be laid under the trusses on each side wall, properly scarfed and spiked. The octagon curb to the five dome lights to be formed with scantlings 12 × 4 inches; and the joisting to the flat to be 11 × 2 inches, and to be laid at such distances apart as are shown upon the longitudinal section, laid with a proper descent for the lead, and covered with inch close boarding.

Portico Ceiling.—The ceiling of the portico to be finished with wood beams, panels, and mouldings of clean Memel deal; the timbers of the roof to be cradled out to the form and dimensions requisite for the beams and mouldings, and the sides and soffits of the beams and fascias to be cased with inch-deal wrought on the face, and the cornices and mouldings to be worked and fixed according to the detailed drawings; the cornice to the octagon domes to be formed as shown with a dentil band, and spandril panels in the soffit, with a 7 × 4-inch interior blocking above the cornice, spouted on the top: the panels in the ceiling to be of inch deal, wrought on the face with feather-tongued close joints, fixed to 4 × 3-inch ceiling joists. Mouldings 7 inch girt, to be wrought and fixed in the panels; the stiles of the panelling to be of 2-inch deal, glued and tongued, and planted upon the cradling and panels.

Roof of Parcel Office.—The timbers of the roof to be wrought and constructed in the manner shown on the section, with laminated curved ribs 9 × 6 inches in thickness, and covered with inch close boarding, wrought one side, jointed and tongued; the gutter boards to be wrought on the underside, and moulded on the edge, and supported with wrought and cut blocks, 18 inches long and 4 inches thick. *Roof of Ticket Office.*—This roof to be constructed with circular ribs 11 × 6 inches, in four thicknesses, for a vaulted ceiling, as shown on the section, with proper cradling to the rims of skylights and central panels, and other work and materials as given in the detailed estimate.

Flats.—The flat roofs to be laid with such joisting wall plates and boarding as are given in the detailed estimate, all the joists to be carefully fitted down upon the plates and nailed and spiked, and to be nowhere wedged or packed up with chips or blocks. *Rolls.*—Hip and ridge rolls formed out of 3-inch deal to be fixed where taken in the detailed estimate upon proper iron shouldered spikes.

Shed Roof.—To provide and fix a double cleading of $\frac{3}{4}$-inch slate boarding upon the iron roof of the shed, laid diagonally, the lower course to be wrought on one side, jointed, and beaded, and only partially nailed from the iron ribs, until the second course is laid in the reverse diagonal direction, and partially nailed with short nails, so as not to pierce the dressed surface of the first course, and then to nail from the iron ribs fully through both thicknesses, and clench the nail points on the upper surface. *Ventilators and Skylights.*—The ventilators and skylights to the shed roofs, and all the other roofs, where shown, are to be done in the manner shown on the detailed drawings and as taken in the detailed estimate, including all the various matters incidental to the perfect completion of the same.

Sleeper Joisting.—All the rooms on the ground floor and basement, where shown upon the plans to have sleeper joisting, are to be laid with 6 × $1\frac{1}{2}$-inch wall plates, carefully bedded upon the walls, and half lapped and nailed at the joinings, and to have sleeper joists $4\frac{1}{2}$ × 3 inches well fitted down and nailed upon the plates. *Single Joisting.*—Single span joisting 9 × 3 and 11 × 3 inches, according to the quantities given in the detailed estimate, to be laid, as will be directed, upon 11 × 3-inch wall plates, with a bearing of not less than 10 inches upon the walls, well nailed and spiked, after being well fitted to the plates without wedging or packing up, and every third joist to be spiked to the plates with spikes 3 inches longer than the depth of the joist, so as to form a complete tie from one external wall to the other. All trimmer joists to the hearths to be carefully framed and keyed, and framed and wedged or dovetailed to the landings, &c., as will be directed by the clerk of the works.

Iron Columns, Girders, and Binding Joists.—To provide and set iron columns and girders where shown upon the drawings, and agreeable to the detailed estimate, carefully bedded, and the girders to be braced with inch wrought iron tie bars, keys, and wedges, as provided at page 24 of detailed estimate, upon the post stones and stone templates in the walls, the binding joists to be 9 × 6 inches, and those next the walls 9 × 3 inches, fitted into the sockets of the iron girders, and bolted and bedded upon templates 11 × 3 and 2 feet long where they rest in the walls.

Bridging Joists.—The bridging joists to be 6 × 3 inches notched down and nailed upon the binding joists and plates, and to have 9 inches bearing at the ends which rest upon the walls; the wall plates for the bridging joists to be 9 × 3 inches where laid in brick walls, and 11 × 3 inches in the stone walls, half lapped and nailed at the joinings. *Lintels and Wood Bricks.*—Lintels 3 inches thick by the various widths required to be laid over all the openings with only 4 inches bearing upon the walls, to serve as turning-pieces to the brick relieving arches; and wood bricks to be provided and built in, where directed for fixing the joiner work. *Fir Girders and Bearers under Cisterns, &c.*—2 fir girders 13 × 7 to be laid under the joisting, 1 under the floor of the station master's office, and the other in the north-west room, upon 12 × 3-inch templates 2½ feet long; and bearers as provided in the detailed estimate to be fixed where directed for carrying the cisterns and other works.

Truss Partitions—Truss partitions, as shown upon the plans Nos. 40 and 41, and section No. 33, to be carefully framed and fixed; that over the first class refreshment-room to have a suspension truss formed with a wrought-iron bar 2 × 2 inches, with shackle joints, keys, and wedges, and 2 cast-iron shoes of the weight of half a cwt. each, as per detailed estimate, page 24. *Stoothed Partitions.*—Common stoothed partitions to be fixed where shown on the several plans, the principal posts, heads, and braces, to be 3 × 3 inches, and filling in stoothing 3 × 2¼ inches well framed and nailed.

Ceiling Joists.—Ceiling joists 3 × 2½ inches to be fixed where required, according to the quantities given in the detailed estimate; those for the vaulted ceiling in the ticket office to be 4½ × 2 inches, as shown upon the section No. 43. All the ceiling joists to be securely nailed, and to be so fixed as to leave a sufficient key for the plaster work, where they intersect or join any of the other main timbers.

Distances.—All the joisting, stoothings, ceiling joists, spars, battening or bracketing, which may not be shown in detail upon the drawings, are to be fixed at the distance of not more than 16 inches, from middle to middle, and all such as are shown in detail, are to be fixed in conformity with the drawings.

Strutting.—Rows of strutting 10 × 1¼ inches, to be close fitted in between the 11 × 3 inch joists where directed, according to the quantity provided at page 21 of the detailed estimate, and well edge nailed to the joists. *Sound Boarding.*—Memel fillets 1½ inch to be nailed to the joists, and slates to be provided and laid upon the same for the counter ceilings in the ground floor, and similar fillets, with ½-inch boarding or split laths to the first floors where directed, according to the quantities provided in the detailed estimate.

Cisterns.—To prepare and fix 20 cisterns in the station, and 4 cisterns in the hotel, to be made of 1½-inch Memel deal, rough dressed, jointed, and tongued, and put together with large dovetails nailed each way, and to have triangular blocks nailed in all the angles 2 inches broad. The long cisterns to be strengthened with ¾-inch round iron screw bolts, and wrought-iron plates, 2½ × ⅝ inches, screwed on the sides as will be directed, according to the quantities provided in detailed estimate.

Sinks.—To provide 5 deal framed sinks, inclosed below with 1¼ inch moulded dwarf doors, hung folding, for the scullery, butler's pantry, and kitchen, second-floor (the lead and ironmongery taken in the other quantities); and to make and fix a double sink in each of the bars of the hotel as will be directed.

Frames and Sashes.—To prepare and fix deal cased frames with fir sunk sills and 2-inch moulded sashes to the various windows, double hung, according to the detailed elevations, with 1¾-inch iron axle, pulleys, best patent sashlines, and iron weights, the pulley pieces to be of 1¼-inch deal, the outside linings of inch, and inside linings of ¾-inch deal. Part of the windows to have circular heads, as shown upon the elevations; the circular windows to have solid frames and 2-inch fixed sashes, the whole to be bedded in fine mortar and neatly pointed in the reveals. The fanlights and skylights to be made and fixed according to the detailed drawings to be given, and the quantities provided in the estimate. The sashes to the bar window to be 2¼ inches thick, moulded on both sides for plate glazing, as shown upon detailed drawings full size.

Floors.—The whole of the floors to be laid with the best well seasoned whitewood Norway battens, machine dressed, and laid with straight joints and splayed headings, laid fair and well smoothed off. Each room to have a marginal batten laid round the walls and partitions, with proper bearers to be grooved for the plinths and skirtings, and mitred at the angles. The marginal battens to be well secured and laid permanently, and the floors to be scantily nailed to admit of being easily re-laid at a future time when thoroughly dried. The margin to the floor of the first-class refreshment room to be laid with clean rubbed Caithness stone, as provided for in the mason work. All the hearths, except those to the sleeper floors, to be boxed to receive the slabs, and to have deal mitred margins let in half the thickness of the floor board, glued and nailed.

Stairs.—The stairs from the first-floor to the upper floors at the Carlisle end, and to the east offices, and to upper rooms next the tower to have 1½ clean yellow deal treads, and 1¼ risers, with 2 inch deal grooved and beaded or moulded wall strings, 3-inch cut front strings, with moulded and mitred brackets, beaded apron linings, with the bracket moulding continued along the face and circular beaded well ways; mahogany moulded handrail 3 × 2½ inches of best Honduras mahogany with deal bar balusters, and a sufficient number of iron balusters, to render the rail secure and steady, to have 2 iron turned newels, 2 curtail steps, and 2 mahogany scrolls, all the wood to be perfectly well seasoned, the ends of the treads and risers to be wedged into the grooved strings with glue, the risers jointed, and glued to the underside of the treads, and well glue blocked; to fix best Honduras mahogany handrails to the stone stairs, and provide and fix an iron ornamental balustrade to the stairs, according to the detailed drawing or pattern given; the balusters to have a continuous iron top rail, and to be let into the stone steps and landings by the mason, and run with lead, with a moulded mahogany newel to the best stairs in the inn, the newel and all the mahogany handrails to be cleanly finished, and polished in the best manner.

Doors and Frames, Casings, and Framed Linings.—The entrance doors to the station to be of 2½-inch deal, double panelled, moulded on both sides, and hung folding upon rebated and beaded frames 8 × 5 inches. The doors to the ticket office to be of 2½-inch deal, and the several doors from the shed platform to the different offices and rooms to be 2¼ inches thick, moulded and square; the doors to the first-class refreshment-room to be 2¼ inches thick, and all the other internal doors in the station and hotel to be 2 inches thick, moulded on both sides according to the detailed drawings and bill of quantities. The frames to the external doors to be 6 × 4 inches, rebated and beaded, with an inch beaded lining planted on the inside and scribed to the stone work; the doorways in the brick walls to have plain rebated casings 2½ inches thick, of the widths necessary to suit the thicknesses of the walls, and the doorways in the stone walls to have 1½-inch moulded jamb linings and soffits, with 3 × 1½-inch framed door grounds, and 5½ × 3-inch rebated door frames to the stoothed and half brick partitions; the external door frames to be secured to the stone work with two ⅝-inch iron bolts and nuts in each jamb run in with lead. The entrance *sash doors* to the hotel, and fixed side lights and framing to match, to be finished according to the detailed drawings and quantities in the bill, also the sash door and frame to the bar with moulded transoms to such external door frames as have fanlights above the same. The *cellar doors* to the inn and coal house doors at the Carlisle end to be 1¼ inch batten doors, tongued and beaded, hung to 5½ × 3 inches rebated and beaded frames; and inch batten doors, and 3 × 3-inch frames, to be fixed to the outside of the coal houses with such hinges, locks, bolts, and fastenings, as are provided in the bill of quantities to be applied, as will be directed; and small trap doors and beaded linings to be fixed where necessary, to afford access to the roofs and cisterns.

Shutters, Moulded Linings, Backs, Elbows, and Soffits.—Moulded shutters, 1½-inch thick, to be hung as shown on the detailed drawings to enclose the entrance doors of the hotel, with a fly shutter on brass hinges, and with brass shutter latches, and inch bead flush back linings; and all the external windows on the ground floor to have 1½-inch moulded shutters, hinges, and fastenings, boxing grounds, moulded backs, elbows, and soffits, or plain nosed window boards as are shown in the drawings, and provided in the detailed estimate, with best strong sash-fasteners to the windows, and brass shutter knobs, and roses to all front shutters and moulded window linings; 1½-inch circular moulded linings to be fixed to the south window in the ticket office, and 1¼-inch moulded linings, backs, elbows, and soffits, to all the windows in the upper stories, except where the windows come down near the floor, in which plain inch deal backs and elbows, with beaded capping are to be fixed, all the backs and elbows to have proper cappings and flush beaded skirtings, which are not taken separately but to be included in the price of backs and elbows. *Architraves.*—The doors and windows on the ground floor to have double fascia architraves, 8 inches wide, and on the first floor 7 inches wide, and on the third story, single fascia architraves, 6 inches wide, those to the windows to have 2½ × ¾ inch plain grounds, that the plaster work may be completed and dry, before fixing the architraves. *Back Mouldings.*—Single back mouldings to be fixed to the door frames of the water-closets in the station, and where else directed, according to the quantity provided. *Angle Beads.*—Angle staff beads of 1¼-inch deal to be fixed to all external angles where necessary, well secured to wood bricks or plugs, and perfectly plumb and straight.

Closet Shelves.—2000 superficial feet of 1¼-inch closet shelving to be provided for the station, and 300 superficial feet for the hotel, to be fixed with proper bearers in the pantries, closets, and where else directed by the Clerk of the Works.

Water-closets.—To fit up 9 water-closets in the inn, and 26 in the station, and 24 self-acting closets; the best water-closets to be fitted up with 1¼-inch clampt flaps and beaded frames; and 1¼-inch bead flush-framed risers and frames, and inch mahogany seats and bearers neatly cut to the apparatus; the seat and riser to be so constructed as to be capable of easy removal to afford access to the works as will be directed; the self-acting closets to have mahogany seats, the full length without flaps, and the risers to be constructed as before described, a portion of the seat to be made to take out for getting at the works, and provide all necessary box grounds and covers to the self-acting apparatus, which will operate by the opening and shutting of the doors; ¾-inch beaded backs and elbows 9 inches wide to be fixed to the station closets, and inch bead, flush do. with capping 12 inches high to those in the hotel.

Pipe Casings.—Pipe casings of ¾-inch deal, beaded, and slightly nailed into rebated grounds, to be fixed in the 2 angles above the seats in all the water-closets, and over the soil-pipes and service-pipes where necessary. *Skirtings.*—To fix 4 × ½-inch square skirtings in the public water-closets in the station, and 6 × ¾-inch beaded skirtings in the best water-closets, upper bed-rooms, and passages, and in the basement of the hotel, and common offices in the station; the best bedrooms in the hotel and station, and smaller sitting-rooms to have inch deal moulded skirting, 9 inches high, and 2½ × ¾-inch grounds, and base mouldings, plinths, and grounds to be fixed in the principal apartments, as will be directed for the appropriation of the quantities provided in the estimate. *Dados and Backing.*—Plain tongued and beaded dados upon rebated plinths and cappings, and battened backing; plain inch deal keyed dados, and 1¼-inch panelled dados, surbases, capping, and other works, as provided in the estimate to be fixed where directed.

Bar Front.—The bar front to be fitted up with 1½-inch deal plain pilasters, with moulded caps and bases, and continued dado, as shown upon the detailed drawings, and as taken in the estimate with 2-inch panelled pilasters in the entrance hall.

Generally.—To provide 6 × 6-inch framed and chamfered legs, and 6 × 4-inch rails to support the stone benches in the ticket office, fit up proper bearers for the marble washing slabs, and provide and fix 1¼-inch moulded dwarf doors and frames under the same; a strong frame for the marble pastry slab, and all other items of joinery provided in the estimate, and shown or implied in the various drawings, and complete the same in a good, sound, and workmanlike manner, to the satisfaction of the Architect or the Clerk of the Works.

PLUMBER'S WORK.

All the *gutters and lead flats* to the various roofs, and the balcony to the inn, to be laid with milled sheet lead 7 lbs. to the superficial foot, of the various widths necessary to make a perfect and secure covering, soundly dressed down to the angles of the gutters, drips, cesspools, and rolls, and secured at all the drips and joinings in the most approved and workmanlike manner, finding all labour, solder, holdfasts, wall hooks, and every other requisite for perfecting the various works in this department according to the quantities provided in the detailed estimate.

The *cisterns and sinks* to be lined with 7-lb. lead, the hips, ridges, and sunk gutters and linings to the skylights to be done with 6-lb. milled lead, and the flushings with milled lead 5-lbs. to the foot. The Contractor to provide competent and experienced workmen, and the foreman of the plumbers to satisfy himself that all the gutters, cesspools, drips, and rolls are properly formed, with sufficient descents, which are not to be less in any part than 1½-inches fall in 10 feet, and the drips 2½ inches deep, before laying down the lead, and any imperfection in the construction to be reported to the Clerk of the Works, and to be altered and rectified before laying down the lead. Loose perforated *lead covers* of 7lb. lead to be laid over the pipes from the cesspools, and 3-inch lead socket pipes to be soldered into the bottoms of the cesspools of the roofs, and 2-inch socket-pipes from the balcony, to convey the water into the cast-iron pipes; 3-inch cast-iron down pipes, with socket joints and proper bends and shoes, to be provided, and after having been previously tested with an hydraulic pump in the presence of the Clerk of the Works and found to be sound, are to be built in with the masonwork where required, each length of pipe to be plugged at the top until the next length is added, to guard against the admission of any obstructing matter, and all the joints to be made perfectly clear for the free passage of the water. The back part of the portico roof, the low roofs at the Carlisle end of the station, and the south side roof of the shed to have 4 × 4½-inch square *cast-iron spouts* fixed on iron brackets, as will be directed, with cistern heads and 3-inch down pipes; those from the portico roof to have shoes to discharge into the gutters of the lower buildings, and the others to have bends to discharge into the drains. 3-inch *cast-iron pipes* to be also built into the foundations under the columns of the shed, with bent ends into the drains, having a socket joint fair with the top of the post stone to receive the flange of the column through which the water is conveyed from the gutters.

Water-closets.—To provide and fix 9 best pan *water-closets* in the inn, and 26 best pan closets and 24 self-acting closets in the station, with all the necessary apparatus and materials complete, including the lead-traps, water-boxes, and valves; and to provide and fix all the soil-pipes, mains, supply, service, and waste-pipes, and all cocks, washers, and other things provided in the detailed estimate, with all other materials and workmanship necessary to complete the same in a sound and workmanlike manner, in such situations in the station and the hotel as will be directed by the Clerk of the Works.

SLATER'S WORK.

The *wing entrances* to the arcades to be slated with Welch lady slates upon strong Memel laths, double nailed with copper nails, and well dressed and laid with sufficient laps, and to be pointed with hair mortar, and to have a hewn *ridge stone* close jointed and set with oil mastic. The *groin roofs* of the arcades to be slated with the best black Lancashire slates, bedded with hair mortar, and secured to the brickwork with double oak pins, and finished with a hewn ridge stone, properly set as before described. The *several roofs to the station and hotel* to be slated with the best Countess slates on strong Memel laths, double nailed with copper nails, and pointed with hair mortar, except such roofs as are close boarded, which are to be bedded in hair mortar and double copper nailed according to the quantities provided of each kind in the detailed estimate; and hewn stone ridges to be set with oil mastic, where directed, according to the quantity provided. The *shed roofs* to be slated with the best Welch lady slates, bedded on close boarding and double nailed with copper nails. The whole of the work to be executed in the best manner, correctly jointed and laid with 2½-inch laps, so as to make the whole perfectly water tight; the works to be examined when completed, and all broken or damaged slates to be made good.

PLASTERER'S WORK.

Materials.—The plaster work to be executed with the best *Fulwell stone lime,* or other stone lime of good quality, which may be approved and adopted by the architect. The lime to be procured and laid up in some convenient situation as soon as the site, or some part thereof, is inclosed with a temporary fence, and the mason work commenced; to be slaked and mixed with a due proportion of clean sharp river sand, screened, and made up and laid by to temper, and prepared for use with a sufficient quantity of lean washed hair of approved quality. The *laths* to be of Memel fir of sufficient strength and free from sap, and the whole of the materials to be properly prepared, and the several works to be executed in the best manner, to the satisfaction of the architect.

The walls to be rendered one coat behind the window backs and elbows, and behind the fixed linings and skirtings, and to be lathed and plastered one coat behind all skirtings and plinths on the timber partitions. All the rooms intended to be plastered are to be finished in three coat work; the walls to be rendered, floted, and trowel stucco, or stone finished; and the timber partitions to be lathed, plastered, and stone finished, and the ceilings to be lathed, plastered, and set, in the best manner. The ceilings in the basement rooms in the hotel, where arched, are to be finished in three coat work, upon the surface of the bricks; the window jambs behind the shutters, and all other jambs, soffits, beams, and arches, to be finished in three coat work.

To run all coves, cornices, and mouldings, according to the several detailed drawings, and quantities provided in the detailed bill, including miters, and stoppings; to cut all quirks, and flote and run all angles and arrisses in a straight and perfect manner.

To use the best plaster of Paris for all moulded and ornamental work, and to prepare and fix all consoles, trusses, corbels, brackets, caps, and ornamental work, provided in the detailed estimate in the manner shown on the detailed drawings.

And to *provide* and fix such enrichments, centre flowers, or other ornamental works as may be directed, of the value of 100*l.* for the rooms and offices in the station, and of the value of 100*l.* in the hotel; the price of the enriched works to be hereafter agreed upon, or left to the valuation of the architect, with whom it shall be optional to apply enrichments to the full amount of the sums reserved for that purpose, or of the value of a less amount at his discretion, and the difference to be deducted from the amount of the contract.

The ceiling in the hall of the hotel and the ceiling of the principal staircase to be panelled as shown upon the drawings. Counter ceilings to be laid in the rooms in the station and hotel, according to the quantities provided in the detailed bill, in such apartments as will be directed; to be 1½ inches thick, composed of lime, sand, screened ashes, and chopped hay, well compounded, and floted in between the joists upon slate bearers, to be fixed by the carpenter. And when the counter ceiling is perfectly dry, all cracks or crevices are to be carefully pointed up with stiff guaged hair mortar.

GLAZIER AND PAINTER'S WORK.

Plate Glazing.—The tops of the *circular lanterns* in the arcades to be glazed with rough plate glass, three-eighths of an inch in thickness, bedded into the rebate of the stonework, the rebate to be primed with one coat of paint, and the glass to be of one circular plate, bedded in good oil putty and neatly dressed off. The five *dome lights* in the portico to be glazed with rough plate glass three-eighths of an inch thick, to be in three plates in height, from the sill to the horizontal bar, to be cut fair and ground on the edges so as to join without overlapping, and to be bent to the curve of the bars, except the centre plate, which is to be flat, and the whole to be well bedded in good oil putty, and neatly dressed; the ironwork of the domes to be painted 2 coats in good white lead and oil, plain colours, and the woodwork of the portico ceiling to be stained an oak colour, and varnished in the best manner. The *coffer lights* in the ceiling of the first-class refreshment room to be glazed with 27 plates, 39 × 36 inches each plate, the glass to be ground on one side; the 10 skylights in the ticket office to be glazed with one plate each of rough plate-glass ⅜-inch thick, which are to be bent to the curve of the roof; the skylights in the parcel office to be glazed with rough plate-glass 93 inches long and about 18 inches broad, containing in the 2 ranges of lights 697 superficial feet. The *skylights* in the shed roof to be glazed with rough plate-glass, in single plates, 10 feet long and 18 inches broad and ⅜-inch thick; and the remaining rough plate glazing, provided for in the detailed estimate, to be applied to the various other skylights in the station and hotel, as will be directed. The *entrance doors* and side lights to the hotel, the door and lower sashes to the internal bar windows, and the *best staircase windows* in the hotel, to be glazed with *polished plate* of good glazing quality, according to the number and dimensions given in the bill of quantities.

Crown Glazing.—All the windows and fanlights throughout the buildings to be glazed with the best Newcastle crown-glass, and the skylights to be glazed with second crown *slate glazing*, with the laps ranging in uniform straight lines. The interior skylights over the kitchen to be glazed with crown-glass, ground and obscured, and glazed in the best manner; all the glazing to be properly bedded, and neatly dressed off.

Painting.—All the wood and ironwork, usually painted, throughout the buildings of the station and the hotel (with the exception of the ironwork to the roof of the shed), to be painted 2 coats, in good white lead and oil, common colours, and to be properly knotted and stopped; and all the sash-frames, sashes, fanlights, and skylights, to have 3 coats in oil; the interior dressed face of the sarking and both sides of the skylights and ventilators of the shed roof to be painted in 2-coat work.

The whole of the works to be done in a good, sound, and workmanlike manner, to the satisfaction of the Architect.

Generally.—To provide all centering and turning pieces for arches, all Mason's and Plasterer's moulds, and to cut away and make good all carpentry, mason-work, and plaster-work, where injured by the fixing of the plumbing or other works; and to provide and complete all other matters incidental to the perfect execution of the various works, which may not have been particularized in the foregoing specification, including all necessary cramps, plugs, dowels, lead, solder, cement, or other materials. And to provide and execute all temporary and contingent works, and to remove the present erections from the site, as required by the fifth article in the conditions.

Specification for the Formation of a Line of Railway and all Works on the Line between the HAVANT AND GODALMING STATIONS. Messrs. LOCKE and ERRINGTON, *Engineers, and* T. BRASSEY, *Contractor.* 1854.

THE *contract* to which this specification refers extends from a point near the Havant station on the London, Brighton, and South Coast Railway, in the county of Southampton, to or near to the Godalming station, on the Guildford and Godalming branch of the London and South Western Railway, in the county of Surrey, being a distance of 32½ miles, or thereabouts.

The contract will consist of the *formation of all the works* on the line, the *erection of all the tunnels, bridges, culverts, and fencing* for a double line of railway, the labourage and materials required for these, including pumping for foundations, scaffolding, machinery, and for excavating, embanking, draining, laying rails, ballasting, and forming the roadway for a single line. The Contractor shall also procure all the bricks, stone, timber, mortar, ironwork, rails, chairs, sleepers, ballast, and every other material and thing necessary for entirely completing the works, together with the land upon which the railway stations and approaches thereto, side cuttings, and spoil banks are to be made; also all the requisite and proper stations, sidings, engine-houses, sheds, workshops, and other buildings, and all signals, turntables, tanks, water columns, and other fixed plant and apparatus necessary or required for working a single line. The land to be for a double line.

Liability of Contractor for Damage.—The Contractor is required to *guarantee* the stability of all the works, and to be liable for all risk and accidents to which they may be subject while in progress, and until opened for traffic to the public. He is also to *make compensation* to the owners and occupiers of land for all the damage they may sustain from trespass, or by imperfect fences, or from water, or by the stopping of the regular channels, or by any other means.

All the Works included, although only Parts shown.—The principal part of the work to be done is described in this specification, and the line of railway is generally described by the plans thereof deposited with the Clerk of the Peace for the county of Surrey on the twenty-eighth day of April, one thousand eight hundred and fifty-three; but it is to be distinctly understood that all the works, although only parts of the same may be shown on the plans and sections, are to be considered as included in the contract, and their value comprised in the sum tendered, as much as if such works had been fully described in this specification; and also that such works, as may be mentioned in the specification and not shown on the plans and sections, are to be included in the contract, the same as if shown on the plans; in short, the Contractor is to execute all the works necessary for the entire completion of the line for the length stated, and to finish the same with good and approved materials to the full satisfaction of the Company's Engineer, and of his deputies and assistants.

Contractor must satisfy himself as to Accuracy of Plans, &c.—The plans and sections to which this specification refers, whether the Parliamentary plans and sections deposited as aforesaid, or the working plans, sections, and drawings, which have been or will hereafter be delivered to the Contractor, are supposed to be correct; but the Contractor must satisfy himself on this point by taking levels, or by any other means, as no allowance will be made or any addition to the contract sum on the ground of any mistake.

Temporary Fences and Occupation Gates.—All temporary fences or gates, or other provisions, necessary for the accommodation of the property passed through and for the prevention of trespass and injury, and for the maintenance of the drainage of the same during the progress of the works, must be made by the Contractor, who shall be liable for all the damage caused by the neglect of such provisions and precautions.

Spoil Banks.—Wherever the Engineer shall deem it desirable to make spoil banks, the Contractor shall immediately, on the land being procured, cause a good and substantial fence to be made and kept in good repair, so as entirely and effectually to fence off from the adjacent lands the piece of land upon which the spoil bank is to be made, and he shall remove from the said piece of land the whole of the soil, which he shall effectually preserve; and after the spoil bank shall have been made he shall properly level, drain, and slope the same to an inclination of 6 feet horizontal to 1 foot perpendicular, after which he shall resoil the whole, and make them fit in every respect for the purposes of cultivation, and he shall restore the fences and drains to their former state, or as nearly so as may be, when the land is to be restored to the owner; but where he shall have permanently secured the land, the soiling and resoiling will in such case be at the Contractor's option.

Setting out Works.—The Contractor shall provide the Engineer or his assistants with labourers and tools for marking on the ground the width of the cuttings, embankments, and fences, and for setting out the bridges, measuring or setting out all or any of the works, and shall provide stakes, staves, poles or marks for these purposes.

Railway to be fenced before Work commences.—The Contractor shall, immediately on taking possession of the land, cause a good and substantial permanent or temporary fence to be erected on each side of the land required for the railway and works, until which be done, no soil or earthwork of any description, nor for whatever purpose, shall be dug or removed; and gates or slip rails shall be placed in these fences for the convenient occupation of the adjacent lands; and wherever the cross fences shall be stubbed up for facilitating the cartage of materials along the line of the said railway, or for other purposes, there shall be erected gates or slip rails for the more effectual prevention of trespass.

Centre Line, &c.—The broad red line on the working plan or plans to be hereafter delivered will show the line of direction of the railway, and the same plans will show the breadth of land to be purchased. On the plan or section will also be delineated the situation of the bridges, culverts, and sloped approaches, as far as they are known to the company, and also the diversions of roads, rivers, and brooks will be shown, and the situations, where it is expected they will have to be made.

Section.—The blue line on the section will show the level of the permanent railway when completed.

The dark shaded line will show the present surface of the ground, as ascertained by levels taken at intervals of 22 yards. or thereabouts, at which places pegs or stakes have been or will be driven into the ground, and which pegs or stakes also indicate the direction of the line.

The portion between the red line and the surface line, coloured red, will indicate the excavations; those portions coloured blue the embankments.

Formation Level.—The red line, which is drawn parallel to the blue line, and at a distance of 2 feet from it, represents the level to which the cuttings and embankments are to be formed previous to receiving the material for forming the roadway. This space is to be filled up by the ballast, sleepers, rails, and chairs, in the following proportions—viz., the ballast under the sleepers to be 13½ inches thick, the sleepers 4½ inches thick, and the rails and chairs 6 inches.

Cross Section of Railway.—All the embankments must be made not less than 18 feet wide at the top, with slopes of 1½ foot horizontal to 1 foot perpendicular, or of 2 feet horizontal to 1 foot perpendicular, where the Engineer shall so require; but in places where there is sufficient material in the cuttings, the embankment shall be made 33 feet in width. Upon this the ballast is to be laid, and the whole shall be finished off according to the form and dimensions shown in the Drawing No. 1, Figure 2.

The above dimensions refer to the embankments when permanently finished, but the Contractor shall, in the formation of the banks, allow sufficient space for settlement, so that when completed and handed over to the Company, at the expiration of the contract, they may remain of the full width above prescribed.

Cuttings.—The cuttings shall be made 18 feet wide at the bottom, or level of the red line on the section, with uniform slopes of 1½ foot horizontal to 1 foot perpendicular, subject, however, to such special exceptions as will be marked on the section. (*See* Drawing No. 1, Figure 1.)

Engineer has power to vary the Slopes.—If at any time it shall appear to the Engineer advisable, in order to facilitate the works, or otherwise for the more effectual consolidation of the material, or for the prevention of slipping, to make the cuttings of a less width than 18 feet, or of a less depth or steeper than is represented on the section, or to leave the sides or slopes of the cuttings standing, or to make them flatter than 1½ foot horizontal to 1 foot perpendicular, or to proceed with the embankments at a less width than 18 feet, or at a less depth than is represented on the section, he, the said Engineer, shall have full power to cause the same to be done; and the Contractor shall implicitly follow his directions in this as well as in all other matters; and he shall remove the remaining earth, or complete the remainder of the work, when the Engineer shall direct, without any extra charge.

Soil to be preserved.—The whole of the soil, or such portions thereof as may be necessary for planting the quicks and soiling the slopes 4 inches thick, shall be first taken from the surface of the ground where the cuttings and embankments are to be formed, and placed on the sides thereof, at convenient practicable distances. This soil shall be carefully preserved for planting the quicks, re-soiling the slopes of the cuttings and embankments, and for such other purposes as the Engineer shall direct.

Drains in Cuttings.—In all the cuttings a drain shall be made on each side of the railway, the bottom of which shall be 6 inches below the lowest part of the ballast. It shall be finished according to the form and dimensions represented in the Drawing No. 1, Figure 1.

Fencing.—A permanent fence shall be made on each side of the railway, throughout its whole extent, with good oak or larch posts, placed not more than 3 yards apart, and 4 split oak, or sawn larch or fir rails, with a standard of split oak or larch in the middle of each length of rails. The posts shall not be less than 5 inches × 2½ inches in their smallest dimensions; they shall be 6 feet long, and have 2 feet hold of the ground. The rails shall have a section of at least 6 square inches, and shall not be less than 2 inches in thickness in the smallest part. The standard shall not be less than 4 inches × 2½ inches, and shall be driven 18 inches into the ground, being placed midway between the posts and firmly nailed to each of the rails. Each rail shall be properly scarfed, and have a projection through each post, of not less than 3 inches. (*See* Drawing 1, Figure 4.)

Drains outside Railway Fence.—Without this fence, and on each side of the said railway, throughout its whole extent, shall be formed the ditches or drains, the top width of which shall be on an average 3 feet, the depth 1 foot, and the width at the bottom 1 foot. These dimensions, however, will vary according to the nature and level of the ground; and in order the more fully and effectually to prevent the lodgment of any water, the Contractor shall in all cases so form the said ditch or drain, that it shall be of sufficient depth to free the cross-tile drains and ditches of the adjacent land, so that the water shall run freely to the next or nearest outlet, culvert, water-course, or bridge; and he shall at all times keep the said ditch or drain free and open, so that no overflowing of its banks or sides can take place, nor any injury be done to the slopes of the cuttings or other works connected with the railway or the adjoining land.

Quick Mounds.—Within this ditch or drain, and at the distance of 1 foot therefrom, on each side of the said railway, throughout its whole extent, is to be raised the mound for the quick border, 1 foot high, on a base of 3 feet, formed and banked up by the soil or turf cut out of the side drain. Within this mound shall be dug and formed a quick border 2 feet wide and 2 feet deep, which shall be filled with the very best of the soil, and planted with a double row of good 4-year old whitethorn quicks, that have been transplanted 2 years out of the seedling bed. 12 sets shall be placed in each lineal yard. (*See* Drawing No. 1, Figures 1, 2, and 3.)

Quicks.—As much as possible of the quick fencing shall be planted from November next to the month of March or April in the ensuing year; and if during the period assigned for making and maintaining the works herein specified, any of the quicks, quick-borders, mounds, posts, rails, ditches, or other works required to be done, shall have been decayed, destroyed, thrown down, or removed from the proper line of direction, as marked out by the Engineer, the Contractor shall replace them and make up all deficiencies, and repair whatever damage may have been done, from whatever cause, in the same manner as when first made.

Cross Fences to be restored and joined to Railway Fence.—Wherever the line of railway cuts through cross fences, or where the adjacent fences are destroyed by spoil banks, or otherwise, the Contractor is required to form a quick mound with soil, and planted with quicks, in the manner described for the quick fence, by the sides of the railway; and to erect a row of posts and rails on each side of the said quick border, so as to make a perfect and continuous fence, properly united and joined to the fences by the sides of the railway; and wherever a cross fence joins or unites with the quick-fences on the sides of the railway, the passage by the side ditches, already described, must be preserved free and open by inserting a short 18-inch culvert under each of these cross fences, or by other sufficient means.

Slopes to be Soiled.—Whenever it may be deemed by the Engineer expedient to soil the slopes of the cuttings and embankments, whether during the progress of the works, or when they are completed,·the Contractor shall lay a stratum of soil 4 inches thick upon the whole surface of the slopes of the cuttings and embankments, and the whole of the slopes shall previously to the soil being laid on be neatly and uniformly dressed to the several angles or slopes hereinbefore described; and when the soil is spread, the whole shall be sown with grass and clover seeds, and shall be properly and neatly maintained for the full period of the contract.

Borings have been made on various parts of the line, and the Contractor may see the account, but he must satisfy himself of its accuracy, as the Company will make no allowance should the material differ from that stated in the account.

General Remarks as to Materials and Workmanship referring to all Brickwork and Masonry.

A list of all the viaducts, tunnels, bridges, on this contract, together with a particular description of each bridge, will hereafter be furnished to the Contractor with the working drawings; but to avoid repetition, the following remarks, which refer to all brickwork and masonry, are here given, and a general specimen of each style of bridge is shown on Drawings Nos. 3, 4, 5, 6, 7, 8, 9, 10, and 11.

Bricks.—All bricks used in the interior of the bridges shall be good, hard, sound, and well burnt, and unless made a year before they are used, shall be well saturated in water.

Quality and Description of Brickwork.—The *bricks* shall be laid in English or Flemish bond, as the Engineer shall direct, with a mallet in well-tempered mortar. No joint shall exceed ¼ inch in thickness (or as close as the nature of the bricks will permit), and every course shall be well grouted. No broken bricks shall be used in any of the arches or walls except what may be required for closing a course, and the work shall be equally good for the interior as for the exterior of the walls. The underside of the arches and the exterior of the walls shall be neatly and effectually pointed. In all battering walls, whether curved or straight, the beds of the bricks shall be laid at right angles to the plane of the exterior battering line. The bricks used in culverts shall be good, sound, and hard burnt, and moulded to the forms to suit the different sized culverts.

The *stone* used shall be hard and sound, and free from backs, beds, shuds, or any flaw whatever, and in each bridge shall be of uniform colour.

The *mortar* shall consist of the best lime, and of clean sharp sand, and shall be well mixed together in such proportions as the Engineer shall direct, either by treading or in a pug mill. If in any situation the Engineer shall deem it necessary to use *cement or water lime*, the Contractor shall provide it *without any extra charge.*

The *quoins and arch stones* shall be well and truly bedded and squared throughout, and no pinning will be allowed. They shall have rustic joints of 2 inches, and be neatly tool dressed. The impost string course and coping shall also be neatly *tool dressed.*

Bad Materials to be removed from the Works.—Any stone, bricks, or other materials, which the Engineer shall think unfit for the purpose to which it is proposed to apply them, shall be removed from the work by the Contractor within 24 hours after the receipt of a written notice to that effect from the Engineer or his Assistant, and in place thereof proper and efficient materials shall be supplied.

The *foundations* for all the bridges over or walls adjoining to the railway, shall be laid not less than 4 feet below the blue line on the section or permanent level of the rails and of the wing walls, not less than 18 inches below the proper line of the slope or of the natural surface of the ground, except where it is expressly stated to be the contrary. For the bridges under the railway the foundations shall be laid at the levels shown on the drawings. If, however, at any of these depths the ground be considered by the Engineer too soft or insecure to build upon, the said ground shall be excavated to such depth as the Engineer shall direct, and the space so excavated shall be built up with concrete, stone, brick, or other solid material fit for the purpose, and the foundations for every bridge shall be inspected and approved of by the Engineer before the superstructure is commenced.

Parapet Walls.—In all cases the parapet walls of the bridges shall have the same inclination as the approaches, and the top width of the approaches shall be at the least 6 feet more than the width between the parapet walls of the bridges.

Bridges of less Height than specified to be pulled down and rebuilt.—In every instance there shall be when completed at least 13 feet 6 inches, or more where shown on the drawing, clear height from the level of the permanent rails to the level of the underside of the arch, and the Contractor shall make such necessary allowance for settlement as to secure this clear height; and any bridge that is of less height when finished shall be pulled down and rebuilt at the expense of the Contractor. The string course shall not be set until at least a week after the centres are struck; and no centres shall be eased, struck, or removed from under any arch without due notice to the Engineer or his Assistants or Inspectors.

Care to be taken in forming Embankments not to injure Bridges or Culverts.—In forming embankments across the arches of all the bridges under the railway, as well as over the culverts, great care must be taken to prevent any of the brickwork being displaced or damaged, for which purpose the Contractor shall carry up the embankment equally on both sides of the arch in their layers, which shall be well and properly pounded and beaten, and the arch shall be loaded uniformly along its whole extent. And the Contractor is hereby expressly forbidden to bring forward any embankment on one side of an arch until the opposite side shall have been backed up and pounded in such a manner as shall effectually preserve the arch and walls in their true and proper shape.

Removal of Centres, Style of finishing Earth round Bridges, &c.—All the bridges and walls shall be properly pounded and backed up, and the approaches made uniformly on both sides; until this be done, in addition to the precautions before required, the centrings shall not be removed, nor shall the parapet walls be built until after the roadway shall have been formed over each bridge. The slopes of the embanked approach roads on the outside of the wing walls shall be well rammed and pounded, and carried up in their successive layers uniformly with the backing between the walls; and the slopes of that part of the approach road which adjoins to the bridge, or comes within the outer fences of the railway, shall be ramparted with sods so as to form with the cutting a uniform slope of the side of the wing walls. The *extrados of the arches* shall, where required, be covered with a layer of well-tampered puddle. After the centres shall have been removed, the soffit and faces of the arch shall be carefully pointed.

Centring.—All the centring used for turning the arches of viaducts, bridges, and tunnel, must be of a form and strength approved by the Engineer, and they must be supported and fixed at such distances as he may direct.

A *tunnel* through Buriton Hill, as delineated on the Parliamentary section, must be constructed from a field numbered 22 on the Parliamentary plan, to a field numbered 27 on the same plan, both in the parish of Buriton, being a length of 484 lineal yards, or thereabouts. It shall be constructed for a double line, and lined throughout with brickwork. Detail drawings, showing the form and thickness of brickwork, and the two faces, will hereafter be furnished to the Contractor. Should the material in any part be found to be such as to require, in the opinion of the Engineer, a greater thickness of brickwork than is shown on the drawings, the Contractor shall in those parts increase the thickness of the same to the extent required by the Engineer. 2 open 18-inch drains must be formed throughout the whole length, 1 on each side of the tunnel.

CULVERTS AND BRIDGES.

A particular description of each culvert will hereafter be given, but the following general remarks will apply to all cases, and general designs for each sort of culvert are shown on Drawing No. 1, before referred to.

Foundations and Backing of Earth.—In cutting out the foundation of these culverts, should the ground be found too soft or insecure to build upon, the said ground shall be excavated to such a depth as the Engineer shall direct, and the space so excavated shall be filled up with concrete, or rammed down with clay or other material, such as the Engineer shall approve of; and when the culverts are turned, they shall be backed up with good sound earth, or clay, and well beaten with a double-handed beater, so as completely to cover them, and secure them from changing their shape.

The *lengths of the culverts* will depend on the situations in which they are to be placed, in some cases being at right angles, and in others oblique to the line of the railway; but every culvert (excepting such as are herein expressly directed to the contrary) shall be built as nearly parallel to the old brook course as practicable, and shall be made sufficiently long to pass completely under the slopes of the embankment (the angle of which has been before described) to the outer sides of the fences, to be made on each side of the railway; and the wing walls to every culvert shall be sodded over and covered with soil, in order that the quick fences may grow thereon. And in all cases, where a culvert does not pass in the direction of the brook course (or where it may be necessary to divert the brook course, and carry it by the side of the railway to the two extremities of the culvert), the said brook course shall be cut of the same dimensions as that so to be diverted or changed; and in order to prevent any washing or injury being done to the banks at the end of the culvert, a short return wall shall be built, so as to guide or direct the water into or from its original course.

Water to be kept off Railway.—Wherever in cutting through a brook or drain the level of the railway, or of the small ditches on the sides of the railway, shall be lower than the said brook or drain, then in order that the water may not flow upon the railway or by the sides thereof, an outfall or level shall be brought up of such a depth as that the water may flow freely by means of a culvert under the railway without changing the course (otherwise than by deepening the bed) of such brook or drain. This, however, will only be required when the brook courses may not be changed, or when the side ditches, already directed to be formed at the outer sides of the fences, cannot conveniently be made to carry off the water. In all cases, however, the Contractor shall, either by the method just described, or by that described heretofore, prevent any water (except what in the Engineer's opinion is absolutely unavoidable) from coming upon the railway, so as to injure the ballast, or the foundations of the road, bridges, or other works connected with the railway, and he shall also prevent the water from backing up the ditches, or flooding the adjoining land.

FORMATION OF SLOPED OR APPROACH ROADS.

Ascents and Descents of Roads.—When occupation roads, or any other road, whether public or private, shall cross the railway by means of bridges, or on the level thereof, or pass by the sides thereof, whether at the places indicated on the map or section, or at any other place or places hereinafter to be fixed upon, the same, when required, shall be cut down, banked up, and formed by the Contractor, and the ascents and descents to each shall, in case of turnpike roads, be not steeper than 1 in 30; for public highways, 1 in 20, except where shown differently on section; and for occupation roads, 1 in 16, except where shown differently on section; and the slopes of the excavated or embanked sides shall in all cases be formed at the rate of 1½ foot horizontal to 1 foot perpendicular, unless otherwise directed by the Engineer.

The *width of these roads*, whether excavated or embanked, shall, for turnpike roads, be 35 feet, and for public or township roads 25 feet, except where shown differently on section and drawings, and for occupation roads 12 feet, clear of the ditches and fence mounds, and at the top or bottom of the slopes (as the case may be), 18-inch drains shall be cut, and (if such be considered necessary by the Engineer) culverts of the same size shall be made under the railway, so as to preserve uninterrupted water-courses by the sides of such roads so crossing the said railway.

Draining and Metalling.—The whole of these roads, whether public or private, shall be well under-drained by diagonal drains filled with broken stones, and the whole of their surfaces covered with a coating of good stone or gravel (no piece of either of which shall be greater than 2 inches in diameter) not less than 12 inches in thickness; and at every crossing on the level a pitched pavement shall be laid, extending across the railway to the fences on each side thereof, and for the full width of the road; and there shall be placed and firmly fixed at the distance of 2 inches from the rail, a kerb of iron, wood, or stone, on each side of the 2 rails, and parallel thereto.

Culverts under Approaches for Side Drains.—Wherever in the crossing of occupation roads, or other public or private roads, whether by means of sloped approaches, or otherwise, the ditches, which are herein specified to be made by the sides of the railway, or by the sides of the embankments, shall be crossed or intersected, a free and uninterrupted water-course shall be left by means of two 18-inch culverts built under each and every such road.

Temporary Roads.—Before any public or private road shall be disturbed for any of the purposes herein required, or for any other purpose, the Contractor shall make a good and sufficient road as near thereto as practicable, or as the case may require; and shall, to the satisfaction of the Surveyor of the road, keep the same in good repair, so as to prevent any inconvenience or obstruction to the free passage thereon, until the bridge or approaches (as the case may be) for the new road shall be fully completed, which must be within the time specified in the Act of Parliament.

Formation of New Road, and Restoration of Old Road to Land.—The making and maintaining these roads, whether private or public, shall be to the satisfaction of the Engineer and the Surveyors of the highways, or of the Surveyor of the turnpike road for the time being; and the Contractor shall also make and maintain to their satisfaction all such soughs, drains, or water-courses as may be needful or necessary during the execution of the work, and shall provide and maintain all gates and fences, and shall extend, alter, and remove the same, according to circumstances, and shall be held responsible for all damage, that may be done to the lands or ground in the execution of any of the said roads: and he shall (having first fenced off and completed such temporary road) remove all the stone, gravel, or metalling upon each private or public road, and cause it to be laid aside; and after such road be cut down, raised up, or the bridge built (as the case may be), the said stone or metalling, with such additional quantity as may be required, shall be re-spread in the manner and proportions already described, and the ground, upon which such said temporary road or side road shall have been formed, shall then be restored to its original state, and the fences made perfect and joined to the fences, which shall in all cases be made on each side of such newly formed road. These fences shall be made either at the top or bottom of the slopes or sides, as the Engineer shall determine, and shall correspond with the fences specified for the sides of the railway; and on every road which shall have been broken up, raised, lowered, or disturbed for any of the purposes herein specified, the Contractor shall, to the extent which such road shall have been so disturbed, maintain and uphold it in a proper state of repair, to the entire satisfaction of the Engineer and Surveyor of the road, for the term of the contract.

Necessary Alterations of Bridges and Culverts adjoining Railway, included in Contract.—If by the lowering or raising of any road it shall be found necessary to lengthen, alter, or vary any culvert or bridge, that may pass under any such road for conveying any brook or stream, or for any other purpose, the Contractor shall cause such alteration or addition to be made, so that the road, culvert or bridge, may be as effective, and the water flowing thereunder may have the same uninterrupted passage, as shall have existed previously to such road being changed. When any turnpike or public road shall be crossed on the level of the railway, gates shall be provided on each side, so constructed as to meet and form a fence across either the road or railway, as the case may require. These gates, together with all occupation, crossing-gates, and the railing necessary for joining the railway fence, shall be of the form and dimensions shown on Drawing No. 1, Figure 5. They shall be formed of good heart of oak, or of the best Memel timber, and shall be fitted up and fixed with the necessary iron-work complete, and shall then have 3 coats of white paint. At each crossing, guard-rails of about 6 inches square shall be placed for the entire width of the road; between these guard-rails there shall be granite paving, no stone being less than 8 inches in depth. In all level crossings, whether turnpike, public, or occupation, side culverts of at least 18 inches in diameter shall be placed along the side ditches, to keep up a free and open communication for the flow of the water. Guard-rails also must be used in all cases. Wherever *diversions of roads* are necessary, they shall be excavated or embanked, as the case may require, and shall be formed at such level, or at such rates of inclination, as may be required by the Engineer. These roads shall be at least as *wide and of as good construction* as the roads for which they are substituted. They shall be formed, metalled, fenced, and drained to the satisfaction of the Engineer of the railway and of the Surveyor of the roads for the time being.

PERMANENT ROAD.

Trimming of Bottom for Ballast.—After the cuttings and embankments shall have been completed, and the temporary roads taken up and removed, then shall the bottom of the cuttings and the top of the embankments be levelled down and brought to the proper height (with the uniform inclinations described, and represented by the red line on the section) for receiving the ballast, ashes, sand, chalk, broken stone, or gravel, upon which the sleepers are to rest.

Ballast.—Should it so happen that no material, which shall be considered by the Engineer fit for ballasting the road, be found in the cuttings in the progress of the works, or in case of a deficiency of such material, whether in quality or quantity, the Contractor shall purchase land for ballast, or he shall procure and collect brick, rubbish, cinders, sand, or other dry substances; or he shall procure good hard stone, which shall be broken into pieces, not larger than 2 inches in diameter. These materials, being free from clay or other improper substances (and being first approved by the Engineer), shall be spread over the surface of the cuttings and embankments from one end of the line to the other.

Ballast Drains.—Throughout the whole extent of the railway herein described, shall be laid a 3-inch tile drain, or a rubble or random drain, 1 foot deep and 1 foot wide. This drain shall be formed with stones or broken bricks, loosely thrown in, so that the water may flow or percolate through the spaces between them. At every 10 yards shall be formed similar transverse drains, which on the embankments must be carried through the ballast to the edge of the slope, and in the cuttings to the small side ditches. In addition to these, shall be formed small surface drains, about 6 inches deep (or more where required), longitudinally and transversely, to free the roadway from surface-water; and the ditches, surface, and random drains, openings, culverts, and pipes shall be effectually made, to the entire satisfaction of the Engineer, and they shall be preserved free and open, so as to afford the most perfect drainage of the roadway for the full period of this contract.

Quality and Size of Sleepers.—The whole of the line throughout shall be laid on wooden sleepers, which shall be of solid heart of oak, good sound larch, or of Scotch fir, prepared by the patent processes used on the London and South Western Railway; each sleeper shall not be less than 9 feet long, 10 inches wide, and 4½ inches thick when cut out of the round log; such log shall not be less than 10 inches diameter at the smaller end, which, when cut up the middle, shall form 2 sleepers, but when put down whole may be 8½ inches diameter at the smaller end. Any sleepers that may be damaged or split will be rejected.

Spikes—For fastening the chairs to the sleepers, 2 wrought-iron bolts or spikes will be required for each chair; each spike shall be made of the best tough iron, 5½ inches long and ¾ inch in diameter, and shall have a large mushroom head to cover the fillet upon the chair.

Spiking Chairs.—In fastening the chairs to the sleepers great care must be taken that the chairs are fixed exactly on the centre line of the sleeper, in order to secure a firm bearing and avoid any rocking or working of the sleeper by the passage of the trains, and great care must also be taken in driving the spikes and in levelling the top for receiving the chair for its whole base, and that the proper level be allowed for the cone on the carriage wheels.

The *keys* for fastening the rails in the chairs shall be made of good, sound, well-seasoned oak. Those for the joints shall be about 7 inches in length, and for the middles 5 inches, and both 2½ inches in width and 3½ inches in depth, rounded to fit the rail and chair. They shall be compressed by being forced through a mandril, and shall afterwards, until used, be carefully preserved from exposure to damp, so that when driven they may expand and remain permanently tight in the chair.

In *driving these keys* a set hammer shall be used, and they shall be driven with considerable force, and care must be taken not to chip or crush the key in driving. Any damaged keys shall be removed, and replaced immediately by sound ones.

Fixing Rails.—After the sleepers are properly chaired and well bedded in their places, the rails, which will weigh about 75lbs. per yard, shall be placed in the chairs, and well and effectually fastened with the wooden keys as before described. The distance between the inner edges of the rails shall, when thus fastened, be 4 feet 8½ inches ; the rails at the joints opposite to each other in a line at right angles to the road shall be exactly of the same level (except on curves), and they shall each have a slight bevel to allow for the cone of the carriage wheels round sharp curves ; the outer rail must be slightly elevated, the exact measure of this elevation will be furnished from time to time by the Engineer.

The *joints of the rails* shall be perfectly level and well fitted, and there shall be left a slight opening to allow for expansion. The length of this opening and the lateral level of the rails will be furnished by the Engineer when required.

Inclination to be preserved.—The greatest care must be taken, when fastening the rails in the chairs, to preserve the proper inclinations hereafter to be described.

Gauge.—There will be 1 line of road or 2 lines of rails throughout. The spaces between the rails shall be 4 feet 8½ inches, and shall be laid most exactly in the true line or curve, as set out by the Engineer on the ground, and especial regard shall be had to preserving the true distance from the rails to the parapets of bridges.

Cottages will be required at each turnpike and public road level crossing, the situations of which will be marked upon the plan, and they shall each be built according to the form and of the dimensions represented on the Drawing No. 2.

A description of these cottages will be given ; but although the whole of the articles required for them may not there be detailed, the Contractor must fully understand that the cottages according to the drawings are to be finished by him in a neat and superior style. He shall provide all the materials and execute the workmanship to the entire satisfaction of the Engineer, and he shall do everything to render the cottages convenient and fit for occupation according to the intent and meaning hereof.

32 *mile posts* and 98 quarter-mile posts shall be provided, and

placed in the ground at proper distances by the side of the railway. The former shall be 6 feet long, 12 inches broad, and 6 inches thick. The latter shall be 3½ feet long, 8 inches wide, and 4 inches thick; both shall be 2 feet into the ground; they shall be painted 3 times, and figures showing the mileage painted thereon.

Engineer has full Control over the Works.—Nothing herein contained is intended to prevent, nor shall prevent the Engineer from having the most full and entire control of the whole of the works herein described; and if at any time during the progress of the said works and before their completion he, the said Engineer, shall think it desirable to commence and carry on the formation of the permanent road, the Contractor shall for that purpose immediately set about its execution, and shall cart or convey sleepers, ballast, ashes, sand, or gravel, rails and chairs, and every other article and thing necessary thereto to the place where the Engineer shall direct; and the Engineer shall from time to time, and at all times, have full power to direct the Contractor to facilitate or push the works, whether partially or wholly, and of whatever kind or nature, and the Contractor shall immediately on such directions being given, increase the number of his workmen, and use his utmost endeavours to carry the same into effect, anything to the contrary of which herein contained notwithstanding.

The *permanent road* shall only be *laid* when in the opinion of the Engineer it is safe or desirable so to do; and if in the further progress of the works such permanent road shall be damaged or be allowed to fall into bad repair, the Contractor shall, if required, when the works are completed, take up and relay it, provide fresh ballast, and do everything required for forming the permanent road, as if the same had not been previously laid.

Completion.—The whole of the works herein specified shall be entirely completed to the satisfaction of the Engineer on or before the 30th day of September, one thousand eight hundred and fifty-seven.

Maintenance during Works.—The Contractor shall keep the railway and the whole of the works herein mentioned in the most efficient state of repair during the execution thereof; and during this time he shall effectually preserve the fences, quicks, and gates, keep fully open the side ditches and drains for the most effectual drainage of the roadway, preserve the most perfect uniformity of the rails, take out and replace all the broken or damaged sleepers, spikes, keys, pins, &c., procure additional supplies of ballast, ashes, or broken stone, preserve the uniformity of the slopes of the cuttings and embankments, and cultivate the vegetation thereon; and he shall do every other matter or thing to the satisfaction of the Engineer, so that the works may, upon completion, be delivered up to the Company in the most perfect state of repair.

Personal Attendance of Contractor required.—The Contractor shall not absent himself from the works without leaving a fully authorized agent to act in his absence, nor shall he, without written permission from the Engineer, let or relet the works to any other person or persons.

Not to keep Tommy Shops.—The Contractor will not be allowed to keep any provision or other kind of shop, nor give tickets to a shop kept by any other person; nor shall he directly or indirectly oblige his workmen to deal with any person in particular, but he shall pay wages in the current coin of the realm on the works and not at any public-house or beer-shop.

The *written dimensions* in figures on the drawings shall be taken *in preference to measurements* by the scales, whenever such are attached to the drawings; and in the event of any dispute arising upon the meaning of this specification or of any of the plans, sections, or drawings herein referred to, such dispute shall be decided by the Engineer, whose decision shall be final and binding on all parties.

Certificate every month.—The Contractor shall, once in each month, furnish to the Engineer a detailed account of the work actually done and of the materials actually used in the construction of the works, which account the Engineer will examine, value, and if correct certify, and the Company will pay the amount so certified in the form stipulated in the Contract.

Rails.—The rails must present the *exact form* of the stamped template, which will be furnished to the Contractor; the section must be rigorously preserved throughout the whole length of the rails, and particularly at the extremities. The *fixed length* of the rails shall be exactly 16 feet, but in order to facilitate the manufacture, 1 rail in every 20 will be admitted, measuring only 12 feet in length; at the same time it is to be understood that these shorter rails will only be admitted from rails of the fixed length which it may have been necessary to cut on account of faults at the ends. 1 rail in every 10 will also be admitted, measuring 4 inches longer or shorter than 16 feet, and no variation from these lengths will be permitted beyond the $\frac{1}{20}$th part of an inch. The Company shall be informed of the exact lengths of the rails as delivered, in order that they may be classed separately. The *weight* of the rails shall be 75lbs. per lineal yard, or thereabouts. The *iron* employed in the manufacture of the rails shall be No. 2 mine iron, free from cinder, so that the rails may correspond with No. 3. The rails must be *perfectly manufactured.* All those which shall be found to be imperfectly welded or show any cracks or flaws will be rejected. They shall be sawn at the ends, which, when finished, shall be perfectly square and sound. Any rails, that may be bent or warped, shall be straightened by means of a screw, and not with the hammer. The rails must *exactly fit* the chairs. The Engineer of the Company shall have the right of superintending or of appointing a person to superintend the manufacture of the rails, so as to see that the conditions of this specification are exactly observed.

Cast-iron Chairs.—The chairs to be *of two kinds, double* and *single,* the former being required for the end bearings of the rails, the latter for the intermediate bearings; they shall each be cast from No. 2 strong grey iron, or from several descriptions of iron possessing equal strength, and run from the cupola. The *joint-chair* will weigh about 27lbs., and the middle chair about 23lbs. 3 middle chairs will be required for 1 joint-chair. The chairs shall be subject to the entire approval of the Company's Engineer, and any that he may reject, whether from an imperfection in the iron or in the manufacture, shall be returned at the expense of the Contractor.

Stations.—A detailed description and working drawings will hereafter be furnished of the requisite stations, which under ordinary circumstances shall be at least equal to, but not of a more expensive character than the average of those, now constructed on the line of the London and South Western Railway and its branches.

Form of Contract for MAINTENANCE *of a* RAILWAY *for a Period between a* RAILWAY COMPANY *and* CONTRACTOR.

ARTICLES of agreement made and entered into this day of , in the year of our Lord , between , of , in the county of , *Contractor* for public works, and hereinafter called "the Contractor," of the one part, and Railway Company incorporated by and acting under an Act of Parliament made and passed in the year of the reign of her present Majesty Queen Victoria, intituled "An Act for making a railway from to ," and also acting under other Acts of Parliament respectively made and passed [*recite particulars*], and hereinafter called "the said Company," of the other part.

Whereby it is witnessed that the said *Contractor*, in consideration of the covenants and agreements hereinafter contained on the part of the said *Company*, doth for himself, his heirs, executors, and administrators, covenant, promise, and agree with and to the said *Company*, their successors and assigns, in manner following (that is to say):—

That he the said *Contractor*, his executors, or administrators, shall and will at his and their own expense in all things forthwith begin and well and effectually, and in a firm, substantial, and workmanlike manner for the term and until the expiration of ten years, to be computed from the day of the date of these presents, maintain, support, complete, and keep in the most perfect order, repair, and condition, and in all respects fit and proper for the safe, free, and uninterrupted transit and passage (at all times both by day and night, and in all seasons) of locomotive steam-engines and of all carriages and waggons drawn or propelled thereby, the whole and every part of the said railway from to , and also shall do all such other works, matters, and things as are mentioned and described or required to be done in and by the specification hereunto annexed (by way of schedule) in the line, level, and direction, and of the description, dimensions, and materials, and in the order and manner and form and subject to the several restrictions, regulations, stipulations, provisions, and conditions mentioned and contained or shown herein or in the said specification.

That the said *Contractor*, his executors, or administrators, shall and will in all particulars abide by and obey and fulfil and observe the said specification and every part thereof, and do, perform, and observe every stipulation, restriction, article, matter, and thing thereby required or therein mentioned, and all other works, matters and things, which may be reasonably inferred therefrom or from the nature and object of the works, matters, and things intended to be hereby contracted for, and shall and will well and effectually indemnify the said *Company* and their successors in respect of and from and against all consequences whatsoever immediate or resulting of any breach, non-performance, or non-observance of any such stipulations, restrictions, articles, matters, or things by or on the part and behalf of the said *Contractor*, his executors, or administrators, or his or their agents, workmen, or servants.

That in and about the works, matters, and things hereby contracted for or agreed or required to be done or herein mentioned, and for the most perfect execution of the same, the said *Contractor*, his executors, or administrators, shall and will (at his and their own expense) find and provide all necessary materials including sleepers (except as hereinafter mentioned) implements and utensils, labour and workmanship whatsoever; it being the understanding, intention, and agreement of the parties hereto, that the said *Company* or their successors shall pay only so much money and find only such sleepers in, about, or relating to the works, matters, and things hereby contracted for, as they hereby expressly and in words agree to pay and find.

That in and about such works, matters, and things, the said *Contractor*, his executors, or administrators, shall and will use and employ the very best materials of every kind, and such as the principal Engineer for the time being of the said *Company* shall approve of from time to time as to every portion of such materials; and in case any part of the works, matters, and things, shall not be from time to time done, completed, and maintained in every respect in a substantial and workmanlike and efficient manner, according to the directions from time to time of the said principal Engineer, it shall be lawful for the said *Company* or their principal Engineer for the time being, or for any of his deputies or assistants to require the said *Contractor*, his executors, or administrators forthwith to take away and remove the materials and to demolish the works or parts of the works objected to, and to reconstruct the same, which he the said *Contractor*, his executors, or administrators shall and will forthwith do at his and their own expense in a substantial, workmanlike, and efficient manner, and according to the directions of the principal Engineer for the time being of the said *Company*.

That if the said *Contractor*, his executors, and administrators shall not in every respect obey, abide by, and observe the said specification and every part thereof, and do, perform, and observe every article, stipulation, restriction, matter, and thing thereby required or therein mentioned, and forbear to do all such things as are thereby forbidden, or if the said *Contractor*, his executors, or administrators shall at any time during the continuance of this contract defer or be guilty of any delay, neglect, or default in executing, or re-executing, prosecuting, completing, repairing, and maintaining the works, matters, and things hereby contracted for, or any part or parts thereof, or shall not uphold, maintain, and keep in such perfect order, repair, and condition as aforesaid the whole and every part of such works, matters, and things in every respect according to the terms hereof and to the said specification to the entire satisfaction of the principal Engineer for the time being of the said *Company*, or shall not *within* *days* after notice given to him, the said *Contractor*, his executors, or administrators, or to any of his or their principal workmen, employed upon or about the said works, or left at the place of abode of the said *Contractor*, his executors or administrators, or of such his or their principal workmen as aforesaid, or of any of them, or at his, their, or any of their office or place of business, in writing, under the hand of the principal Engineer or any other officer or servant or person on behalf of the said *Company*, specifying or in general terms referring to the works required to be done and executed, do and execute whatever may in and by such notice be required to be done and executed; then and in every or any such case it shall be lawful for the said *Company* and their successors, if they shall think fit, upon or after the expiration of such days, to purchase and provide proper and sufficient materials, implements, and utensils, and to engage and employ competent foremen, superintendents, agents, and workmen, and (either by contract, or measure, and value, or otherwise), to duly execute, re-execute, prosecute, complete, and maintain, or further, or expedite the said execution, re-execution, prosecution, completion, and maintenance of such works or parts of works, matters, and things; and the said *Company* or their successors shall not by reason of the powers aforesaid, or the exercise or non-exercise of them, be in anywise barred of, or prejudiced, or hindered as to any right or remedy for breach of contract or otherwise; and the said *Company* and their successors shall and may retain and deduct all or any part of the charges and expenses of such materials, work, and labour, and all or any part of the expenses, losses, or damages, which they may incur or sustain by reason of any such or any other breach of this contract, or which may be in any way referrible thereto, out of any money, which may at any time or times be payable by them to the said *Contractor*, his executors, or administrators under this contract or otherwise so far as the same will extend, and the residue thereof shall be paid or made good by the said *Contractor*, his executors, or administrators to the said *Company*, their successors, or assigns with interest thereon, at the rate of five pounds per cent. per annum, and such residue (and in default of such payment the whole of such charges, expenses, losses, damages, and interest) shall and may be recoverable by the said *Company* or their successors by action or suit in any Court or Courts of Law or Equity. And the said *Contractor*, his executors or administrators, shall not nor will (in case of the exercise by the said *Company* or their successors of the power hereby given) in any manner molest, disturb, or hinder the said *Company*, or their successors, or any person or persons engaged by or for them, from executing, re-executing, prosecuting, completing, and maintaining the said works, matters, and things, or any of them, or in using and applying for that purpose (if the *Company*, or their successors think proper so to do) any materials and implements of or belonging to the said *Contractor*, his executors or administrators, which may be or may have been on or near the said works. But the said *Company* or their successors shall not be bound to use or apply, nor, if they so use or apply, shall they be answerable for the loss and wear and tear, or for any damages or injury to any materials, utensils, or implements of the said *Contractor*, his executors or administrators, used by them, the said *Company*, unless such damage or injury be wilfully or wantonly incurred or occasioned by or on the part of the said *Company* or their servants.

That the said *Company* shall have a lien for all moneys at any time due, or to become due to them upon or in respect of this contract or the works, matters, and things hereby contracted for or agreed, or required to be done, upon all and every the materials, utensils, and implements of or belonging to the said *Contractor*, his executors or administrators, or which he or they may at any time use or may have used in or about the said works, or which may be at any time upon or about the same.

That in order to the due execution and completion of the works, matters, and things hereby contracted for, he, the said *Contractor*, shall and will personally attend to the said works in such manner as shall be required by the *Company's* principal Engineer for the time being, and shall not nor will delegate the management or superintendence or conduct thereof to any other person, without the consent in writing of the said *Company* or their successors for that purpose signed by the Chairman and Deputy-Chairman for the time being of the Directors of the said *Company*, first had and obtained on each occasion, and subject always to the condition and agreement that any such consent may at any time be withdrawn, and that a consent given on any occasion shall not operate as a waiver of the general prohibition hereby stipulated.

That the said *Contractor* shall not (except by his last will) and his executors or administrators shall not at any time during the continuance of this contract, assign, underlet, transfer or otherwise dispose of all or any part of his or their interest in this contract to any person or persons whomsoever, without the consent in writing of the said *Company* under their common seal first had and obtained, and if such consent is given upon any specific occasion, it shall not operate as a waiver of the general prohibition herein contained but only as a licence for that one occasion. And if the said *Contractor* (except as aforesaid) his executors or administrators shall at any time during the continuance of this contract, assign, underlet, transfer, or otherwise dispose of his or their interest therein, or any part thereof, without such consent in writing as aforesaid, expressly given on the particular occasion, or if the said *Contractor*, his executors or administrators shall become bankrupt or apply for the benefit of any Act of Parliament for the relief of insolvent debtors, or make any composition with his or their creditors, this contract shall absolutely cease and determine, excepting so far as regards the rights and remedies of the said *Company* under the clauses herein contained against the said *Contractor*, his executors, administrators, or assigns, in respect of any previous breach or non-performance of any of the clauses and conditions on his and their part to be performed and observed.

That in case of the death of the said *Contractor* during the continuance of this contract, his executors or administrators shall forthwith appoint and employ, and during all the remainder then to come of the said contract shall keep employed in and about the superintendence of the works hereby contracted for, at least two sufficient and capable persons, to be from time to time approved by the Court of Directors for the time being of the said *Company*, who shall give their whole and undivided personal attention to the superintendence and performance of the work hereby contracted to be done. And in case the executors or administrators of the said *Contractor* shall refuse or neglect forthwith upon his decease, or at any time thereafter during the continuance of this contract, to appoint and keep employed in and about the said works at least two such sufficient and capable persons, who shall from time to time be, and continue to be, approved of by the Court of Directors for the time being of the said *Company*, then and thereupon this contract shall absolutely cease and determine (except as aforesaid).

That in and about the works, matters, and things hereby contracted for and during the progress, and in respect thereof, the said *Contractor*, his executors and administrators, shall and will obey and observe all the clauses, restrictions, and stipulations contained in the several Acts of Parliament now passed, or which shall at any time hereafter be passed relating to the said *Company* or to the said railway, as well such as refer to or provide for the support and maintenance of bridges, roads, tunnels, or other works, and the prevention and making good of damage or injury to any canal, river, or other property, as also all other the clauses, restrictions, provisions, and stipulations in such several Acts contained. And the said *Contractor* doth hereby admit that the said *Company* have given him notice of the section of the Act of Parliament thirdly hereinbefore mentioned relating to penalties payable by the said *Company* in case of the entry of them or their contractors upon any lands without previous consent or payment, or tender of compensation.

That the said *Contractor*, his heirs, executors, and administrators shall, and will, well and effectually, and to the satisfaction of the said *Company* and their successors, save, defend, and keep harmless and indemnified the said *Company* and their successors, and the estates and effects of the said *Company*, and the engineers and other officers and servants of the said *Company* of, from, and against all and all manner of actions, suits, penalties, losses, costs, and charges, damages, and expenses, claims and demands of, or by any corporation or corporations, or person or persons whomsoever, for, or by reason, or on account of, or in relation to the said present or future Acts of Parliament, or of any of them, or the clauses, restrictions, stipulations, or provisions contained, or which may be contained therein respectively, or for or by reason of any breach, non-observance, or non-performance thereof on the part of him, the said *Contractor*, his executors or administrators, or any of his or their servants or workmen, so far as the same shall or may have been occasioned by or can in any way be attributed to the act, negligence, or default of the said *Contractor*, his executors or administrators, his or their servants or workmen, but not in any case where the same shall have been occasioned by, or can in any way be attributed to, the act, negligence, or default of the said *Company*, or to any other accidental cause over which the said *Contractor*, his executors or administrators, could exercise no sort of control.

That if by reason of any such last mentioned breach, act, or omission, or of any breach, non-observance, or non-performance by the said *Contractor*, his executors or administrators, of any stipulation, clause, article, or thing herein, or in the said specification contained, the said *Company*, or their successors, shall be called upon to appear to answer, pay, or make good any actions, suits, penalties, losses, costs, charges, damages, and expenses, claims, or demands, it shall be lawful for them from time to time so to do, at the expense of the said *Contractor*, his executors or administrators, and to make such payments, compensation, and satisfaction as to them the said *Company*, or their successors, may seem reasonable; and afterwards to either sue the said *Contractor*, his executors or administrators, for the whole or any part of the amount thereof, and for all their own losses, costs, charges, damages, and expenses relating thereto, or to deduct the same, or any part thereof, from any monies which may at any time or times be payable by them to the said *Contractor*, his executors or administrators, under this contract, or otherwise; but, nevertheless, nothing herein or in the said specification contained, shall subject the said *Contractor*, his executors or administrators, to make good or repair any damages which may be occasioned to the said line of railway from public commotion or riot, or from the working any mines under or near the same, nor to indemnify the said *Company* against any damage which may arise to any person or company therefrom; nor shall the said *Contractor*, his executors or administrators, be responsible for any penalties, loss, or injury which may be occasioned, incurred, or sustained by the said *Company*, or to which they or any other person may be or become liable, in case of any unavoidable interruption of the passing along the said line of railway, by the falling in of any culvert, bridge, embankment, or other works (provided the same is purely accidental and could not have been foreseen or provided against by the said *Contractor*, his executors or administrators, by the exercise of due and reasonable care), or by the interruption of any canal, or other work, by any such purely accidental cause.

That during the whole of the continuance of this contract, he the said *Contractor*, his executors or administrators, shall have and undertake the whole care and responsibility of the works, matters, and things hereby contracted for, and of the execution thereof, and of everything appertaining thereto, and that although the said *Company* and their Engineer and his deputies and assistants may from time to time direct or have directed such works and the progress thereof, and shall and will effectually indemnify the said *Company* and their successors from all loss in respect thereof.

That he the said *Contractor*, his executors or administrators, shall not nor will in or about the execution of the works hereby contracted for enter upon or otherwise make use of or injure any of the lands adjoining or near the said railway, without the consent of the said *Company*, and also of the owners and occupiers of such lands; but shall (except with such consent) strictly confine his and their operations within the rails or *fences* which enclose the site of the railway itself.

That in consideration of the premises and of the said *Contractor*, his executors or administrators, duly and punctually observing and performing all and singular the covenants, agreements, conditions, restrictions, and stipulations herein and in the said specification on his and their part contained, they the said *Company* or their successors shall and will yearly, and in each year during the said term of years for which this contract is entered into as aforesaid, pay for the whole of the works, matters, and things hereby contracted for, the sums following in lawful money of the United Kingdom (that is to say), for the 1st year of the said term ending on the day of , the sum of ; for the 2nd year of the said term ending on the day of , the sum of , during each year of the following years of the said term commencing from the day of and ending on the day of , the sum of , and so on in each year, in proportion for any portion of such year, during the continuance of this contract, *by equal monthly* instalments, or in such other manner as the said *Company* and the said *Contractor*, his executors or administrators, may from time to time mutually agree. And also such further sum and sums in respect of such further works as shall be required by the said *Company* to be done by the said *Contractor*, his executors or administrators, at a scale of prices as in the said specification mentioned (above and beyond the support, maintenance, and reconstruction of the iron work, masonry, brick and earthwork, bridges, viaducts, tunnels, arches, retaining and fence walls, roads, ways, fences, and other works in and by the said specification particularly mentioned to be comprised in this contract), as shall from time to time become due from the said *Company* or their successors to the said *Contractor*, his executors or administrators, within one month after the same or any part thereof shall be certified by the principal Engineer for the time being of the said *Company*, by writing under his hand, to be due and payable to the said *Contractor*, his executors or administrators.

That they, the said *Company*, and their successors shall, in case of the failure of any sleepers now laid down upon the said railway, by reason of the insufficiency of their kyanization or of their natural decay, provide at one of the termini of the said railway, sawn and ready for adzing or seating, all such sleepers as shall be necessary to be substituted for those which shall so fail or decay, as aforesaid.

That they, the said *Company*, shall and will, at the request, costs, and charges of the said *Contractor*, his executors or administrators, use all the powers now vested, or which may be vested in them, in and by any Act or Acts of Parliament, for the purpose of enabling the said *Contractor*, his executors and administrators, to perform this contract; he and they indemnifying the said *Company* to their satisfaction from all consequences arising therefrom.

That such and so many of the waggons, rails, blocks, and other materials, as well as implements and tools belonging to the said *Contractor*, his executors or administrators, at the end of this contract, as may be available, or applicable and necessary in the judgment of the principal Engineer for the time being of the said *Company*, for the purposes of the works included in this contract, and the prosecution and execution thereof, shall be left by the said *Contractor*, his executors or administrators, for the use of the said *Company*, at a valuation to be forthwith put thereupon by the principal Engineer of the said *Company*; and if the said Engineer shall be then dead, or shall have ceased to be the principal Engineer of the said *Company*, the said valuation shall be made by arbitration, constituted and conducted in like manner as arbitrations touching differences or disputes between the said *Company* and the said *Contractor*, his executors or administrators, are, under the same circumstances hereinafter directed, to be constituted and conducted; and the said *Contractor*, his executors or administrators, shall then and in anticipation of such valuation, deliver to the said *Company* such and so many of the waggons, rails, blocks, and other materials, as well as implements and tools, then in use, or being upon the works, or near the same, as may be available or applicable and necessary, in the judgment of the principal Engineer for the time being of the said *Company*, for the purposes of the works included in this contract, and the prosecution and execution thereof by the said *Company* or any future *Contractor* of theirs, who it is hereby agreed shall and may forthwith take possession thereof accordingly; and that the said *Company* shall pay to the said *Contractor*, his executors or administrators, the amount of such valuation when made within 14 days after the same shall have been demanded of them.

That for the purpose of settling any dispute or difference whatsoever which may arise between the said *Contractor*, his executors or administrators, on the one part, and the said *Company* on the other part, upon or as to this contract, or the said specification, or the wording or construction thereof respectively, or any clause, matter, or thing, therein respectively contained; or as to any of the works, matters, and things hereby contracted for or mentioned herein, or in the said specification, or upon or as to the amount, quantity, quality, price, or condition of any such works, matters, or things; every such dispute or difference, from time to time, shall be forthwith referred to the arbitration of the said Engineer, if he be then living and be the Engineer of, or employed by, the said *Company;* but if the said Engineer shall then be dead, or shall not be the Engineer of, or employed by, the said *Company*, then every such dispute and difference shall, from time to time, be referred to arbitration, as follows (that is to say)—that two persons shall be appointed for the purpose of arbitration by the parties in difference; one of such arbitrators to be named by the said *Company* or their successors, and the other by the said *Contractor*, or his executors or administrators, within 7 days next after any such dispute or controversy shall so happen, to whom the matters so in dispute for the time being shall be referred; and in case such two persons shall not agree on such matters within 21 days after the same shall have been submitted to them, then the same shall be referred to the determination of such indifferent person as the arbitrators, by any writing under their hands, shall nominate and appoint as umpire in the premises previous to the said arbitrators entering upon the matters in dispute, and that the award of such arbitrators, in writing, under their hands, to be delivered to the parties in difference within such time as may be agreed upon, or in default of their agreement as aforesaid, the award of such umpire, under his hand, to be delivered to the parties in difference within such time as aforesaid shall be binding and conclusive on the said parties; and that in case either of the said parties in difference shall neglect or refuse by the space of seven days next after notice in writing, given by the other party for that purpose to appoint an arbitrator as aforesaid, on his or their part, it shall be lawful for the arbitrator to be chosen by the party giving such notice to make an award, which shall be binding in like manner as if an arbitrator chosen by the party so neglecting or refusing, had actually joined therein. And further, that the award of the Engineer, if pursuant to these presents he be the sole arbitrator, shall in like manner be binding upon the said *Company*, and upon the said *Contractor*, his executors and administrators, and the said *Contractor*, his executors and administrators, and the said *Company*, and their successors, shall and will stand to, abide, and be bound by, perform, fulfil, and keep every award so made, as aforesaid (whether of the said Engineer, or of other arbitrators, or of an umpire, as aforesaid), and that this submission for or in respect of the same, may, at the option of either of the said parties hereto, be at any time made a rule of any of her Majesty's courts of record, and the performance of the contract shall not, nor shall any work, matter, or thing, hereby, or by the said specification, required, be in any wise suspended, postponed, or defended, by reason of any dispute or difference, or of any reference thereof to arbitration, by virtue of the provisions last aforesaid, or by reason of any award not having been made.

And lastly, that nothing herein contained shall prejudice or annul any of the clauses or provisions of the said specification, and that if in any case there shall be, or appear to be, any contradiction or inconsistency between this contract and the said specification, such construction shall be put upon the same, as the principal Engineer for the time being of the said *Company* shall consider most conducive to the interests of the said *Company*. In witness whereof, the said *Contractor*, hath hereunto set his hand and seal, and the said *Company*, their common seal, the day and year first above written.

Specification for REPAIRING *and* UPHOLDING *the* RAILWAY *and* WORKS *for a Period of* *Years.*

The main object of this contract is to secure to the *Company* the *efficient support and maintenance* of the railway and works in complete *order* and *condition*, and the *Contractor* is required to *provide* good and approved materials (except as hereinafter mentioned as to sleepers), and all necessary labour for *repairing and renewing any broken or defective rails, chairs, points, crossings, switches, turntables, sleepers, ballast, spikes, plugs, keys, &c., for the permanent road, and also for repairing and upholding, and if necessary, reconstructing, all bridges*, culverts, tunnels, arches, pipes, drains, watercourses, ditches, walls, fences, gates, slopes, mounds, and other works, including therein all approaches and approach roads to, over, and across all public and occupation and other bridges and over or across the railway, so far as the said *Company* are liable thereto. And the *Contractor* shall perform all the requirements of this specification at such times and in such manner as that the *Company* shall be kept harmless and indemnified against any extra charge whatsoever, either by the *Contractor*, or any landowner, or other person or persons in respect of such works, or any of them. And it is hereby expressly declared that the intent and meaning of this specification is, that the *Company* shall not be chargeable with any expense for repairing, upholding, reconstructing, or well and properly maintaining, the railway and works connected with it (except as hereinafter mentioned, regarding sleepers), beyond the sum stated in the contract, and that the *Contractor* shall be liable to make *good, restore, and maintain all works damaged or affected, or put out of repair, by slips or accidents,* which may happen to the said works, whether the same shall arise from accident merely, or from original defect in construction, or from any other cause whatever, save public commotion or riot, or the *wilful and wanton negligence of the said Company or their Servants.* And for all the costs and charges for damage, that may happen to any of the trains, engines, waggons, carriages, properly constructed according to law, goods, property, or persons passing along the railway by reason of any act or of any omission of the *Contractor* or his Servants in the execution of the duties herein imposed.

All the sleepers at present laid down upon the railway have been kyanized, and it is therefore presumed that their general renewal will not be required during this contract, and the *Company* will, in case of the failure of any sleepers, *by reason of the insufficiency of the said process, or of their natural decay, provide, at one of the termini of the railway, sawn and ready for adzing or seating, all such sleepers as shall be necessary* to be substituted for those, which shall so fail or decay as aforesaid: the *Contractor* at his own expense finding all necessary labour and materials to fit the same for use, and to lay the same down (including the carriage thereof from the termini of the railway to the places where they shall be laid down), and at his own expense in all things providing all such sleepers, as shall be necessary for replacing all or any broken, damaged, or split sleepers and all or any others, that may become unfit for use from any other cause soever than the failure of the said process, or such general decay, as aforesaid.

The works comprised in this contract extend from the terminus at   to the terminus at   the distance being   miles, or thereabouts, and include the two main lines of the railway, all the sidings, crossings, and turn-tables, now laid at all the stations (but exclusive of the repairs of the offices, warehouses, dwelling-houses, and other buildings occupied by the *Company, and of such sidings, crossings, and other works as may hereafter be executed by the Company; and of the approaches to the stations on the sides of the said railway.*

The following are the inclinations to which the railway was originally laid :—

It is believed that the present gradients of the railway are not materially different from those herein described, but the *Contractor* must satisfy himself on this point, as no deviation from them in the future maintenance of the road will be permitted, and the execution of this contract shall be taken as an admission on the part of the *Contractor* of the accuracy of the said gradients.

The *Contractor* shall maintain the rails according to the inclinations hereinbefore stated—firmly and evenly in the chairs by compressed oak keys, similar to those now in use. He shall well and effectively beat up all depressed sleepers, so as to preserve the most perfect uniformity of the surface of the rails. The chairs shall be kept tightly fixed to the sleepers with iron spikes, and the proper gauge of 4 feet 8½ inches, between the rails, shall be accurately preserved. All the turn-tables shall be maintained on a level with the rails, on each side they shall move freely round without jolting. All the switches, crossings, and points, shall be kept in good order, so that the engines, and other carriages, may pass quite smoothly over them. The ordinary level, or lateral inclination of the rails, shall also be maintained; all damaged, split or broken rails, chairs, sleepers, or spikes, shall be removed, and replaced with others of good quality. All decayed sleepers shall, in like manner, be removed, and replaced with others, to be from time to time furnished by the *Company*, as hereinafter mentioned.

All surface and under drains in the ballast shall be preserved, and additional drains shall be laid, when and where the *Company's* principal Engineer shall think necessary from time to time.

An additional quantity of *ballast* consisting of good *gravel*, *ashes*, *or broken stone*, shall be brought to, and laid at any spot wherever subsidence has taken place, or where, from any other cause, a further quantity is required. The *Contractor*, however, shall not be called upon to raise the ballast more than 3 inches under the proper level of the surface of the rails.

No soil or clay shall be used in raising up any embankment that may have settled; but, whenever the road requires to be raised, it shall be done with chalk or ballast of the best description.

The ditches by the sides of the railway in the cuttings shall be kept open and free for the passage of water. They shall be not less than 2½ feet below the surface of the rails. The material from the cleansing of these ditches shall not be laid on the slopes, but shall be removed to some proper depot, to be provided by the *Contractor*. All offtake or outfall drains for getting rid of the water from the side ditches shall be carefully preserved, and if need be, additional drains shall be provided, for the *Contractor* will not be permitted to carry the water in the ditches, by the side of the railway beyond the first outlet or place, where an outfall drain can be procured.

The slopes of the cuttings and embankments shall be maintained by the *Contractor.* He shall remove all *slips that already exist,* if any, as well as those that may hereafter occur from whatever cause, to such extent as shall be necessary for securing the stability of the railway, and the free passage along the line. He shall well drain, cultivate and plant with hay, grass, or clover, or with ornamental trees, all the slopes on the line, the yearly produce of which shall be considered the property of the *Contractor.*

The quick borders, fences, ditches, gates and occupation crossings shall also be maintained in good condition. The quick shall be kept free from weeds, and every care be taken to rear them as rapidly as possible.

All damage done to the railway or adjoining lands shall be paid for by the *Contractor*, and he shall also be liable to compensate or make good to the *Company* any injury, loss, damage, or delay, that may happen on the railway by reason of any deficiency or neglect in maintaining the fences and gates in a proper and efficient manner, and all damage and expenses in any manner occasioned thereby to the said *Company* or any other person whomsoever.

The *Contractor* shall also uphold, maintain, repair, guarantee, and, if necessary, reconstruct all the iron work, masonry, brick and earth work, bridges, viaducts, tunnels, arches, culverts, retaining, and fence walls, together with the approaches and approach roads aforesaid, and all ways, watercourses, and other passages; and provide from time to time good stone, bricks, mortar, or other materials, for the necessary repairs thereof; and he shall reinstate such defaced or damaged works as shall arise from decay, or other cause; and shall build up, repair, and reinstate, such damaged works, in the manner and at such time without hindrance to the traffic on the railway, as the principal Engineer of the said *Company* shall direct, or as in his absence, or in the absence of orders from him may be necessary or proper.

The contract comprises, within the sums therein specifically mentioned, all the iron work, masonry, brick, and earth work, bridges, viaducts, tunnels, arches, culverts, retaining and fence walls, roads, ways, fences, and other such works as aforesaid, now constructed; and the *Contractor* shall be obliged in like manner to uphold, maintain, and repair, guarantee, and, if necessary, reconstruct all such further works of any of the above kinds, which shall during his contract be constructed in or about the said railway, at such a scale of prices and remuneration as shall be determined upon by the said Engineer, if he shall be then living, and shall continue the principal engineer of the said *Company*, and if he shall be then dead, or shall have ceased to be the principal engineer of the said *Company*, then at such scale of prices and remuneration as shall be agreed upon between the said *Company* and the said *Contractor*; or in the event of their disagreement by arbitration, constituted and conducted in the manner mentioned in the contract with regard to the settlement of differences between the said *Company* and the said *Contractor;* and in the event of any such repair, maintenance, or reconstruction, of any such new works being required, and being done by the said *Contractor* during the period of this contract, the *Contractor* shall once in three months deliver to the said *Company* an account of all such extra repairs, maintenance, and reconstruction: and the same shall, if found correct, be paid for by the said *Company*, at such prices, and on such terms as are hereinbefore in that behalf mentioned.

All the old materials, that are no longer required for the works or that have become unfit for use, and replaced by other approved materials, shall become the property of the *Contractor;* but he shall remove them from the line to some convenient place, and no materials of any kind will be permitted to remain on the railway or on the slopes thereof, except such as are absolutely necessary for the purposes herein specified.

The *Contractor* shall be at liberty to use toll-free engines and waggons properly constructed on springs for the purpose of carrying iron, rails, stone, bricks, ballast, earth, and other materials necessary for the purposes herein required, but for no other purpose; but the *Contractor* shall use such engines and waggons at such times only as cannot interfere with the passage of the trains on the railway.

The *Contractor* shall, from time to time, be informed by the *agent of the Company of the number of the trains and the hours of their departure from each place*, and the *Contractor* shall so arrange his work as to leave the road clear at least 15 minutes before the expected or proper arrival of each train, and no engines, waggon, or other thing shall be again placed on the road by the *Contractor*, until each and every such train shall have passed, and for the purpose of being at all times accurately informed as to the number of trains, and the hours of their departure from each place, the *Contractor* shall apply for information at least once a week; and, in the case of any subsequent alteration of the hours of departure or of any extra train, it shall be sufficient for the *Company* to give or transmit reasonable notice thereof to the said *Contractor*, or to some of his officers engaged upon the said railway, or at some of his places of business thereupon, or near thereto.

Wherever good gravel, fit for ballast, exists in the slopes of the cuttings, the *Contractor* is hereby authorised to take it subject to the conditions hereinafter mentioned, paying, however, the adjoining and other landowners for any additional land that may be thereby rendered necessary or proper to be taken for sloping and resoiling the sides of the railway, after the ballast shall have been removed or otherwise; and whenever the *Contractor* shall enter the slopes of the cuttings for ballast, he shall at his own expense, and to the satisfaction of the *Company's* principal Engineer, put in proper and substantial points, crossings, and switches; and during the period when they are in use, or when ballast is being obtained he shall keep a policeman to guard them, and to give the necessary signals on the approach of the trains. If any engine or waggon belonging to, or employed by, or for the said *Contractor*, or about the works, matters, and things hereby contracted for, or any of them, be moved off the rails, or be standing within the space required for the train, whether upon the rails or not, a signal shall be sent off by the *Contractor*, at least a quarter of a mile to warn any train approaching.

No ballast siding shall be placed in a dangerous position, and the consent of the Engineer shall in all cases be obtained before any siding be commenced, and the same shall in every respect be constructed and managed to his satisfaction.

During the night the ballast engine shall carry a signal lamp, and a similar lamp shall be suspended on the last waggon of the ballast train. A policeman with a lamp shall also be in attendance on every such train, and if the train shall require to be unloaded on the main line, the policeman shall advance at least a quarter of a mile to warn any train approaching on that line.

These precautions shall be observed during the replacing of rails or sleepers, putting in points, crossings, or sidings, raising the road, or doing any other thing, by which the safety of the trains, if not forewarned, would be endangered; and the *Contractor* shall keep proper policemen and signalmen for these purposes, and shall in all cases, in order to prevent accident, give due notice at the stations, both above and below the spot, that such operations are going on.

During the winter, if any snow or ice shall have fallen on the rails by which the engines shall be prevented from travelling at their accustomed speed, the *Contractor* shall, without waiting for orders, instantly and effectually remove it; and for this, as well as any other purpose, wherein the dispatch of the trains is involved, it is hereby expressly understood, that the *Contractor's* workmen shall consider it to be their first duty to remove any impediment or obstruction from the line, and to give at all times such assistance as the exigency of the case may require, without making any additional charge.

At the end of the term, the *Company* will purchase of the *Contractor*, at a valuation in the usual manner, all such materials and tools as they may require for the further repairs of the railway and works.

The *Contractor* may erect all necessary huts, sheds, or workshops on such lands of the *Company* adjoining the railway as shall be pointed out by the *Company's* principal Engineer, and upon no other lands of the *Company*, he the said *Contractor* becoming tenant and occupier at will of such sheds, huts, and workshops, and of the sites thereof; but the *Company* will not be bound, at the expiration of the contract, to take or pay for any hut, shed, or workshop, or other building, which may during the term have been built by and used for the convenience of the *Contractor*, unless permission to erect such buildings, and an undertaking to pay for it, shall have been expressly given in writing by the principal Engineer of the *Company*.

Nothing herein contained shall prevent the *Company's* Engineer from having the most full and entire control of the railway and works; and in the event of his being dissatisfied either with the state of the rails, drains, sleepers, points, crossings, turn-tables, or other things appertaining to the road, or with the slopes, fences, bridges, walls, approaches, approach roads, gates, or other works, or any of them, or any part thereof respectively, he shall have full power, and he is hereby authorized to employ any additional number of workmen, and to procure all the requisite materials for constructing, repairing, improving, or reforming any work, that he may consider insufficient, or that he may consider requisite for fulfilling the requirements herein contained; and all costs and charges that may arise from the employment of such men, and the purchase of such materials shall be paid by the *Contractor*, or the amount deducted from any payment that may then or at any time subsequently be due to him from the *Company*.

In like manner, all claims of landowners or tenants for trespass or damage done to adjoining lands by reason of the execution of this contract, or the support and maintenance or failure of the said works, or any of them, shall, if not satisfied by the *Contractor*, be paid by the *Company*, and the amount deducted from any money that may become due to the *Contractor*.

The *Contractor* and his principal agents shall be permitted to travel by the *Company's* trains, and to send despatches on the business of the railway free of cost; but no district superintendent or workman, unless specially authorized, shall ride on the trains without paying the usual fare, which fare will be returned, if the charge shall afterwards appear to have been incurred in the execution of the business of the *Contractor* and touching his contract.

Lease for WORKING A LINE OF RAILWAY *for a Term of Years.*

ARTICLES of agreement made and entered into this 21st day of February, 1851, between the Taw Vale Railway and Dock Company of the one part, and Thomas Brassey, of Lowndes Square, in the county of Middlesex, Contractor of Public Works, of the other part.

Whereas, by an Act of Parliament made and passed in the first year of the reign of her Majesty Queen Victoria, intituled, "An Act for making a railway from Penhill, in the parish of Fremington, in the county of Devon, to the town of Barnstaple, and for constructing a dock in the said parish of Fremington, to be called 'The Taw Vale Railway and Dock,'" the said Taw Vale Railway and Dock Company are empowered to make and maintain the Taw Vale Railway from Penthill aforesaid to Barnstaple aforesaid. And whereas, by another Act of Parliament made and passed in the 9th and 10th years of the reign of her said Majesty, intituled "An Act for amending the Acts relating to the Taw Vale Railway and Dock, and for making an extension therefrom to the Exeter and Crediton Railway, in the county of Devon," the said Company are empowered to make and maintain a certain railway in extension of the said hereinbefore mentioned Taw Vale Railway, and which said extension was to be a railway from and out of the said Taw Vale Railway, and terminating at or near the town of Crediton by a junction with the Exeter and Crediton Railway there. And whereas the railway authorized by the said firstly hereinbefore recited Act to be made, has been completed and opened for goods traffic, and part of the line of the said extension railway, by the said secondly hereinbefore recited Act authorized to be made, viz.—That portion lying between Barnstaple and Umberleigh Bridge, in the said county of Devon, has been in part constructed, and the said Thomas Brassey has by articles of agreement bearing even date herewith, and made between the said Company of the one part, and the said Thomas Brassey of the other part, contracted for the construction of the remaining part of the said extension railway, viz.—that part from or near Umberleigh Bridge aforesaid, to the proposed junction of the said extension line with the Exeter and Crediton Railway, at or near Crediton aforesaid; such contract, however, being binding only upon the said Company in case of their giving to the said Thomas Brassey, his executors or administrators notice as in the said articles of even date is mentioned to commence and proceed with the works thereby contracted for; and in case of the passing in the present session of Parliament of an intended Act authorizing certain deviations in the line and levels of the said extension railway, for which Act the said Company are now making application to Parliament, and of the power not existing in the said articles contained of annulling and putting an end thereto within 6 months after the failure to obtain such intended Act; and in case the said Thomas Brassey, his executors or administrators, do not exercise the option given to him in the said contract, to rescind the same in the event of the notice to proceed with the works within 2 years from the date thereof not being given, as therein mentioned. And whereas the said Company hath agreed—in case the said intended Act shall be passed in the present session of Parliament, and the remainder of the said extension railway shall be constructed and completed—to grant to the said Thomas Brassey, and the said Thomas Brassey hath agreed to take, a lease of the whole of the said Taw Vale Railway, from commencement thereof at Penhill aforesaid to the termination thereof, by the said proposed junction thereof with the said Exeter and Crediton Railway, and of all the works and conveniences thereof, but not including any of the superfluous lands of the said Company, upon the terms, stipulations, and conditions hereinafter expressed, and such other terms, stipulations, and conditions (if any) as before the execution of such lease shall be mutually agreed on between and by the said parties hereto; NOW THEREFORE THESE PRESENTS WITNESS—And the said Taw Vale Railway and Dock Company do hereby, for themselves, their successors and assigns, covenant and agree with the said Thomas Brassey, his executors, administrators, and assigns: and the said Thomas Brassey doth hereby for himself, his heirs, executors, administrators, and assigns, covenant and agree with the said Company, their successors and assigns, in manner following (that is to say):—

First. That the said lease shall be *for the term of* 7 *years* from the day on which the whole of the line of the said Taw Vale Railway, including the stations, shall be actually opened for traffic, *determinable*, nevertheless, *at any time* during the said term by the said Company, their successors or assigns, upon delivering to the said Thomas Brassey, his executors, administrators, or assigns, or leaving at his or their usual or last known place or places of abode or business, or at the principal station of the said railway, 12 calendar months *previous notice in writing*, under the common seal, or under the hands of two of the Directors of the said Company, of the intention of the said Company, their successors, or assigns, to put an end to and determine the said lease at and from the expiration of the said notice.

Secondly. That the *rent* reserved and made payable by the said lease shall be at the clear yearly sum of *l.*, without any deduction in respect of any expenses of maintenance, repairs, management or working, or of any duties, taxes, rates, assessments, or other outgoings whatsoever, except the income-tax; and *in addition* to the said clear yearly sum of *l.*, one clear moiety, or equal *half-part* of so much *of the net receipts or clear profits*, after deducting every actual payment and making every allowance, which ought in fairness, or usually is or may be taken into account in estimating interest, receipts, or clear profits in such transactions arising from, out, and in respect of the demised premises, as shall exceed the said rate or sum of *l.* per annum; such moiety also to be paid without any sort of deduction, except income-tax.

Thirdly. That the said net receipts shall be calculated up to the 30th day of June and the 31st day of December in every year, and the said rent, consisting of the said clear yearly sum of *l.* and of the said moiety of the excess of the said net receipts over and beyond the sum or rate of *l.* per annum, *shall be paid half-yearly*, on the 21st day of July and the 21st day of January in each year, and the rent payable on the 30th day of June or the 31st day of December, as the case may be, which shall first happen after the commencement of the said term of 7 years, shall be a sum after the rate of *l.* per annum, and the moiety of such net profits beyond that sum.

Fourthly. That the whole of the said *rent*, consisting as aforesaid, shall be *recoverable by distress*, action, and all other usual means and proceedings for the recovery of rent, and by seizure and sale of the engines, carriages, and other the stock and plant, and personal chattels and effects, whether in or upon the demised premises or contiguous thereto.

Fifthly. That *the said lease shall contain all such covenants,* provisions, and stipulations, binding the said Taw Vale Railway and Dock Company, their successors and assigns, and the said Thomas Brassey, his executors, administrators and assigns respectively, as may be deemed requisite or expedient for giving full effect in the most definite, efficient and satisfactory manner to the preceding articles, and the several objects and provisions, matters and things hereinafter expressed (that is to say) :—

A.—For the due and punctual payment by the lessee, his executors, administrators, and assigns of the said rent, consisting, as aforesaid, free from all deductions except as aforesaid.

B.—For the punctual payment by the lessee, his executors, administrators and assigns, as the same shall become due, of all present and future parliamentary, county, parochial, and other duties, taxes, rates, assessments, and other outgoings upon or in respect of the demised premises or any part thereof, and the owners and occupiers thereof respectively, save only such income-tax as ought by law to be deducted from or otherwise paid by the lessors, their successors or assigns, in respect of the said rent consisting as aforesaid.

C.—For the working, management, and use by the lessee, his executors, administrators, and assigns of the said railway, and the works and conveniences thereof, in a proper safe and efficient manner for the conveyance of passengers, animals, goods, and all other kinds of traffic, at all times during the term, and for indemnifying the lessors, their successors and assigns against any loss, damage or injury, arising in any way from or out of such working, management or use.

D.—For the providing, employing, using, maintaining and keeping in complete repair and efficient working order and condition by the lessee, his executors, administrators and assigns, at all times during the term for the purposes of the said extension railway, and of the traffic thereof, of a proper stock in every respect adequate to the exigencies from time to time of such traffic of carriages and locomotive engines of all proper kinds and classes, and of all other power, machinery and horses, carts, utensils, implements, materials, articles and things for the time being requisite or expedient for the purposes aforesaid.

E.—For the providing and employing by the lessee, his executors, administrators, and assigns, at all times during the term for the like purposes, of a sufficient number of skilful and experienced superintendents, engineers, drivers, stokers, guards, clerks, officers, servants, and labourers of every requisite description, so that every reasonable facility and convenience may be afforded for the conveyance and accommodation of goods, cattle and passengers, and also for the development and encouragement of traffic of all kinds on the said railway.

F.—For binding the lessee, his executors, administrators, and assigns at all times during the term, at his and their own proper costs and expenses in all things, and notwithstanding any fall, slip, or subsidence of any embankment or cutting, bridge, viaduct, tunnel or other work, or any other accident whatsoever, to repair and maintain and keep in complete, thorough and substantial repair and working order and condition in all respects and fit for public use, the acts of the Queen's enemies and any damage or destruction from evil communications excepted, the whole of the said railway and the works and conveniences thereof; and to replace any ballast, sleepers, rails, chairs, pins, and keys, which may be requisite; and to keep in the most perfect and substantial order and repair all earthwork, stone, brickwork, and masonry, iron and wood work and all bridges, culverts, arches, drains, tunnels, viaducts and fences, and also, all the permanent way of the said railway and all stations, sheds, warehouses, platforms, wall fences, and buildings, which are or may be executed and built in the demised premises or any part thereof; so that the line of rail on the same railway, turn-tables, swings and all other works and conveniences thereof shall at all times during the said term be fit for public use, and in such repair and condition; and the said railway, and the works and conveniences thereof, with all other the demised premises, and all improvements thereon, peaceably and quietly to leave, surrender and give up at the expiration, or other sooner determination of the said lease, reasonable wear and tear and any damage by the Queen's enemies or by civil commotion excepted.

G.—For the insurance in some London office in the name of the said Company against damage by fire, at the cost of the lessee, his executors, administrators and assigns, of all stations, buildings and other insurable property and works to be included in such lease to the full value thereof, and for the application of the monies to be received from every such insurance in reinstating the same buildings and works, when and as often as the same may be destroyed or damaged by fire; and in default of such insurance being duly effected by the lessee, his executors, administrators or assigns for enabling the lessors, their successors and assigns from time to time to insure the same buildings and works at the expense of the lessee, his executors, administrators and assigns, and for recovering the sum or sums paid in respect of all such last mentioned insurances in the same way, as the rent hereby reserved is made recoverable.

H.—For providing for the entry by the Directors, Engineers and other officers and agents of the lessors or their successors at all times during the time on the said railway, and the works and conveniences thereof, to view and examine into the state of repair and condition of the same; and in the event of the lessee, his executors, administrators, and assigns neglecting to repair and keep in a complete state of repair and working order and condition, and at all times fit in all respects for public use, as required by these presents the said railway and the works and conveniences thereof and every part thereof, then, but without prejudice in any respect to the full operation in all respects of any covenant for repair and keeping in complete repair and working condition, and all rights and remedies thereunder, that the lessors, their successors, or assigns, or their Engineer, may from time to time give notice in writing to the lessee, his executors, administrators and assigns, of such neglect, specifying generally the repairs required or the defects of condition in the opinion of the lessors, their successors, or assigns, or their principal Engineer for the time being; and that in the event of the lessee, his executors, administrators and assigns refusing or for one calendar month thereafter neglecting to make the proper repairs, and to put the said railway and the works and the conveniences thereof into proper working order and condition, the lessors, their successors or assigns and their Engineer and other officer, servants, and workmen may enter upon the same railway works and conveniences, and make such repairs and put the same into such working condition.

I.—For securing the repayment by the lessee, his executors, administrators and assigns to the lessors, their successors or assigns, of all the expenses incurred by them in or about putting the said railway and works and conveniences thereof into such repair and working condition as aforesaid, with interest after the rate of 5*l.* per cent. per annum, from the time or respective times of the payment of such expenses, and for enabling the same to be in addition to any remedies under covenant recovered by seizure, distress and sale, in like manner and with like powers in all respects as the said rent, if in arrear, may be or is hereby made recoverable; and for securing to the lessors, their successors or assigns, and their Engineers, and their officers, servants and workmen, the utmost facilities for enabling them to put the said railway and the works and conveniences thereof into such state of repair and working condition.

J.—For prohibiting the lessee, his executors and administrators, from assigning or underleasing the demised premises or any part thereof, or otherwise parting with the possession thereof or charging or in any manner incumbering the same, or any right or interest therein, without the previous consent in writing in every case of the lessors, their successors or assigns, under their common seal; and for providing against such consent in any one or more case or cases rendering such consent unnecessary in any subsequent case.

K.—For effectually providing for the ascertaining by the lessors and the lessees respectively, their respective successors, executors, administrators or assigns, from time to time, of the net receipts arising from or produced out or in respect of the demised premises, and every part thereof, and for the keeping and preserving by the lessee, his executors, administrators, and assigns, of all proper and correct accounts, books of accounts, vouchers and other documents and evidence, requisite to show the same in a distinct and clear manner; and for the inspection thereof without charge at all reasonable times by such person or persons, as shall from time to time be by the lessors, their successors or assigns, authorized in that behalf.

L.—For providing for the furnishing by the lessee, his executors, administrators and assigns to the lessors, their successors or assigns, without any charge, correct weekly returns of the traffic and of the total gross receipts upon the railway during the preceding 7 days; and also for furnishing in like manner and without any charge within 14 days after the 30th day of June and the 31st day of December in every year, a written return, showing the total gross and net receipts, and also the expenditure during the preceding half year, from, for and in respect of the demised premises, and the respective sources and distinct amounts and proportions of such receipts and expenditure, and respectively arranged under such clear distinct heads and otherwise, as shall be sufficient to show fully and completely the actual state of the accounts relating to such receipts, and as the lessors, their successors, or assigns shall from time to time require.

M.—For providing that the Directors, Engineers, and other Officers and Servants of the lessors or their successors, *bonâ fide* acting and travelling in the execution of the Company's business but not otherwise, may from time to time at the will and pleasure of such director to be testified by some writing under the hand of the Chairman of such Directors, or their Secretary or Engineer, travel in the execution of the business of the company on the said railway, by any trains not being special or private trains, free from all charge whatsoever.

N—.For binding the lessee, his executors, administrators and assigns, to fulfil and keep at all times during the term in all respects, all the conditions, provisions and things contained and expressed in and by the said recited Acts, and the other Acts of Parliament relating to the maintenance and working of the said railway, or which may hereafter be in force relating to the said railway, and by or on part of the lessors, their successors or assigns, to be observed, performed, kept and fulfilled in relation to the superintendence and management of the said railway and the works and conveniences thereof, and the traffic thereon and the tolls, rates and charges in respect thereof, and for indemnifying the lessors, their successors and assigns and their real and personal estates from and against the observing, performing, keeping and fulfilling such conditions, provisions and things and every of them, and all actions, suits and proceedings, costs, charges, penalties, damages, claims and demands in respect or in consequence thereof, or by reason or in consequence of the working or using of the said railway and the works and conveniences thereof, or any part thereof, or any omission, act or default in relation thereto, or otherwise howsoever concerning the premises.

O.—For giving to the lessors, their successors, and assigns, a power of re-entry in every event of the rent or any part thereof being in arrear, wholly or in part, for 1 calendar month after the said 30th day of June and 31st of December in each year, no sufficient distress being found on the said demised premises, and the rent having been first legally demanded; and in every event of failure by the lessee, his executors, administrators and assigns, to perform, fulfil, and observe any award to be made as provided for by Article 7, for 21 days after notice to perform, fulfil, or observe the said award.

P.—For providing that, while and so long as the lessors and the lessee, their respective successors, executors, administrators and assigns, shall respectively abide by and perform and keep the several covenants, stipulations and agreements on their respective part, to be in the said lease contained, neither of them shall, without the previous consent of the others or any of them, do execute or concur in or seek or attempt to do, execute or concur in any act or arrangement, matter, or thing whatsoever, either by promoting any new railway, branch railway or road, or other means of communication whatever, whereby, or by the effect whereof, the traffic profits gains or business to arise or be engaged or be capable of arising, or being engaged upon or from the demised premises or any part thereof, shall or may be in any way diminished, interfered with or prejudicially affected.

Q.—For providing that, upon the expiration or other sooner determination, upon such notice as hereinbefore in that behalf mentioned, of the said term, the lessors, their successors or assigns, shall take, at a valuation to be made with reference to the then actual efficient working value, all the plant, stock, carriages, locomotive engines, machinery, utensils, implements, articles and things then in use upon or employed for the purposes of the said railway by the lessee, his executors, administrators, or assigns; such valuation to be determined by two valuers, one of them to be nominated by the lessors, their successors or assigns, and the other by the lessee, his executors, administrators or assigns; and in case of such two valuers not agreeing in the said valuation, the same to be referred to the decision of such arbitrator as hereinafter mentioned in Articles 7 and 8. Clauses, similar in effect to which articles, shall be inserted in the said lease.

R.—A covenant on the part of the lessors and their successors for quiet enjoyment by the lessee, his executors and administrators of the demised premises, so long as the covenants and agreements on his part are duly performed.

S.—A covenant for abatement of rent, in case the line is stopped by the acts of the Queen's enemies or by civil commotion.

T.—That the lessors will, at the request and at the costs and charges of the lessee, and on being properly indemnified by him, exercise and put in force or permit the lessee to exercise and put in force all the powers contained in their Acts of Parliament, when requisite so to do, in the same manner, as if the said lessors had remained in possession of the said line and the lease had not been granted.

U.—And a covenant on the part of the lessors not to carry, but to give good will to the said Thomas Brassey.

Sixthly. That from and after the said railway shall have been fully opened for traffic, and from which day the said term of 7 years shall commence, and until the said intended lease shall be executed, the said Thomas Brassey, his executors and administrators shall have possession and enjoyment of the premises to be demised on the terms and conditions of the intended lease; and these presents shall be carried into effect accordingly, as nearly as circumstances may admit, as if the intended lease had been granted;

but nevertheless these presents shall not be or operate in any manner as a lease, but shall be and operate only as an agreement for a lease.

Seventhly. In every event of any difference arising between the said Thomas Brassey, his executors, administrators or assigns, and the said Taw Vale Railway and Dock Company, their successors or assigns or their Directors, Engineers or officers or others concerned in carrying these presents or any part thereof or anything therein expressed into effect, or any of them, or as to the true construction, effect, or intent of these presents or anything therein expressed, or as to any of the incidents or consequences thereof respectively, or as to anything to be done or omitted with reference thereto respectively, or as to any other matter or thing whatsoever touching the premises, *such difference shall* from time to time *be referred* by either of the parties in difference *to the sole arbitration of the Arbitrator herein after named* or other, the arbitrator for the time being appointed as hereinafter mentioned for the purposes of these presents; and, on any such reference being made to him, he shall proceed in the matter of the reference or references by such ways and means whatsoever as to him shall seem best, and his award or awards therein shall be final and be binding and conclusive on all the parties in difference and their respective executors or administrators, successors and assigns, and shall be performed, fulfilled, and observed by them accordingly without any suit or trouble whatsoever, so as such award or awards be made in writing under the Arbitrator's hand within 30 days next after he shall have been appointed, or within such further time as he shall from time to time by writing under his hand appoint.

Eighthly. That William Tite, of Lowndes Square, aforesaid, Esquire, a Director of the said Taw Vale Railway and Dock Company (notwithstanding that he may at the time of acting under the reference hereby provided for be a Director of the said Company) shall be the first and present Arbitrator for the purposes of these presents, and in case of the death, refusal, neglect, or incapacity to act in any reference of the said William Tite or other, the Arbitrator for the time being, then on any such difference arising any or either of the parties in difference may apply to the Commissioners of Railways to appoint an Arbitrator, and the person from time to time so appointed shall, until his death or refusal, neglect or incapacity to act, be the Arbitrator for the purposes of the presents.

Ninthly. That the reference to submission made by these presents, may at any time be made a rule of any of Her Majesty's superior courts at Westminster on the application of any party interested.

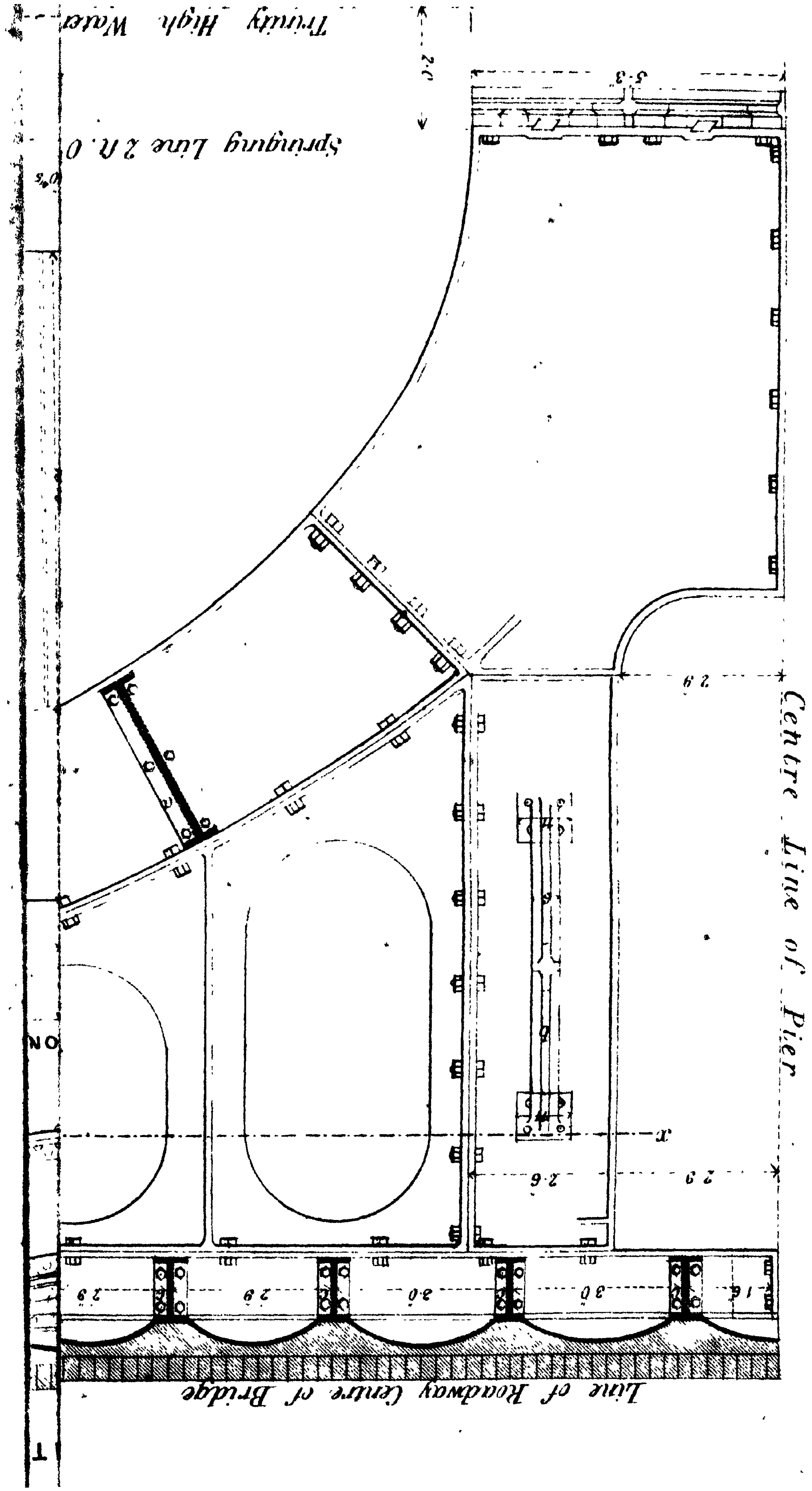
In witness whereof, the said Taw Vale Railway and Dock Company have hereunto set their common seal, and the said Thomas Brassey hath hereunto set his hand and seal the day and year first above written.

Passed under the Common Seal of the Taw Vale Railway and Dock Company in the presence of

Signed, sealed, and delivered, by the said Thomas Brassey, in the presence of W. H. Farmer, Clerk to Messrs. Swift and Wagstaff, Solicitors.

THOMAS BRASSEY (*A*).

GEO. T. PORTER, Clerk to Bircham and Co., 46, Parliament-street.


Trinity High Water
Springing Line 2 ft. 0
2.0
5.3
0.45
2.9
Centre Line of Pier
x
2.6
2.9
2.9
2.9
3.0
3.0
1.6
Line of Roadway Centre of Bridge
ON
T

Specification of the several Works required to be done in Constructing and Completing a New Bridge, *at* Westminster, *from Bridge Street, in the Parish of St. Margaret, Westminster, to Bridge Street, in the Parish of Saint Mary, Lambeth, according to the Plans, Elevations, Sections, detailed Drawings herein referred to, and such other Drawings as shall be furnished and the Conditions hereinafter specified. And also for Maintaining the Piers and Arches of the Old Bridge during the Construction of Thirty-three Feet in width of the New Bridge, and then removing the Old Bridge as hereinafter specified.* Thomas Page, *Engineer. Now erecting.*

tracts from the General Stipulations.

The contract is to be taken subject to the conditions in this specification, and to such excess or diminution as is hereinafter provided and the schedule of prices hereunto annexed, and the amount of the contract is to include the construction of the whole of the works in the manner and of the materials hereinafter mentioned, including the supply of all labor, materials, scaffolding, tools, implements, templates, centres, machinery, pumping, and other things, whether separately specified or not, for the construction and completion of the new bridge across the Thames at Westminster, together with all contingent works according to the accompanying drawings (numbered from 1 to 17 inclusive) and this specification, and also for the maintaining of the piers and arches of the old bridge during the construction of 33 feet in width of such new bridge to the southward of the old bridge, and during the period required for removing the old bridge.

The Contractor is to *maintain* under the arches of the bridge *the greatest possible waterway*, and for that object he is *not to moor barges or fix stages* outside the line of works on the piers marked I. II. III., and shown by the letters A B, C D, E F, on Plan No. 12 beyond a distance of 3 feet from those lines, but he is to arrange for driving the piles of such parts of the new piers by stages on the bearing piles, or by stages and barges from the opposite sides of the piers.

The *Trinity Datum*, referred to on the drawings and in this specification, will be marked upon a fixed object on the Middlesex and Surrey shores of the river, and such marks will correspond with the Trinity high-water standard fixed by the Trinity Board at or near such point; and low-water, where referred to in the drawings or in this specification, shall be understood to mean a line 18 feet below the level of the above-mentioned Trinity high-water Datum.

The words *Old Bridge,* wherever they may be mentioned in this specification or on the drawings referred to, shall be taken in all cases to mean the existing stone bridge , and the words *New Bridge,* the bridge to be executed under this contract, and according to the conditions, stipulations, and drawings connected therewith.

Provision for not intercepting the Navigation of the River and for providing sufficient Lights.

The Contractor is to adopt such arrangements, as not to interrupt the navigation of the river (beyond the space allowed by the Engineer) in the execution of the works, and is not to interfere with the same unnecessarily, by keeping barges near the site, or in any other manner so as to impede the free passage of all craft, boats, &c., both up and down the river.

The Contractor is also *to provide such lights, beacons, guards,* or other precautions for the prevention of accident to craft navigating the river, as the Thames Navigation Committee of the port of London, their officers or the Engineer of the Commissioners of Her Majesty's Works for the time being may require.

The *Contractor* shall at all times *give due notice* to the Engineer or his assistants *of the covering over* with earth or other material any part of the work executed, in order that such work may receive the Engineer's certificate of approval before being so covered, and that correct dimensions of the same may be taken. Should any such work or materials have been so covered in without the sanction of the Engineer, the Contractor shall, if required, uncover the same at his own expense.

As to filling up Holes, &c.—The Contractor upon the completion of the works shall fill up all holes and trenches which may have been made or dug; level such mounds of earth as may have been made or raised, and clear away all rubbish, which may have been occasioned or made in the execution of the works; and the Contractor shall bear and pay all costs, damages, and expenses, which may be incurred or sustained in consequence of any accident, arising from such holes and trenches connected with the works being left unfenced, or from materials being left or placed in improper situations.

As to Copies of Drawings, &c.—The Contractor is to *provide* *himself at his own expense* with a copy of this specification, and of all the drawings and other matters referred to therein, or of any further drawings or instructions, which may be at any time provided for the carrying out of the works.

As to giving Lists of Workmen.—The Contractor if required shall furnish to the Engineer, his assistant, or any other person appointed by the Engineer, an account of the number of men employed on the works connected with or comprised in this contract, or on any day-work, which may be performed, whenever such account may be required of him.

Of the Excavation.—The bed of the river shall be excavated to the several depths for the foundation of the abutments and piers as shown upon the drawings, and the earth so excavated be used for filling in behind the abutment, if approved of for that purpose by the Engineer, or it shall be disposed of in such other manner as he may direct.

Of the Dredging.—The Contractor is to undertake to dredge the bed of the river, to improve the channel for the navigation at such times and in such situations as the Engineer shall direct; the dredged material to be used in filling and backing if required at the time, and if not, it shall be paid for at a price named in the schedule.

Of the Order of Proceeding with the Work.—The works shall be commenced on the foundations of the Middlesex and Surrey abutments, on the south side of the bridge, and with the foundations of the piers marked I., III., IV., and V.

On the sites of the abutments the bed of the river shall be levelled to the depth of 24 feet below Trinity datum, and on the sites of the above-named piers the bed of the river shall be dredged and levelled to 24 feet below Trinity datum, so that a fair surface may be prepared for the piling, The bearing piles shall then be screwed down or driven to a depth of 45 feet below Trinity datum, or such depth as the Engineer shall direct on the positions shown by the Plan No. 6, and the enlarged Plan No. 13 ; the side bearing piles for supporting the greenstone slabs shall also be driven to similar depths, and then the iron sheet piling shall be forced down to the depth shown on the Section No. 6, and in the position shown on the Plan No. 6, from the angles AB at the junction of the cut-water and sides of the pier to a length of 33 feet towards the old bridge in those lines, which are clear of the old platform, and up to the old platform where the lines of the new piers abut upon them.

The additional masonry of the old piers 3, 4 and 7, to the extent required for the foundation of the bridge 33 feet in width, shall then be removed down to the platform, and such part of the platform removed as shall be required for completing the said part of the new foundations, all the piles of which in the immediate vicinity of the old piers shall be screwed down, so as to disturb the old foundations as little as possible. A row of close piling, 12 inches diameter, with screws of same diameter, shall be screwed down under the sixth rib from the south side to complete the foundations for the 33-feet width of bridge, and the iron sheet piling shall then be continued to the same line.

When the iron piles on the sides of the pier and abutments have been continued to the extent described, the piles of the cutwater shall be driven; the iron kerb and tie bars fixed as shown on Drawing No. 6, the surface of the pier shall be cleared of any deposit, and the space between the piles shall be filled with concrete of lias lime and gravel up to the level of the kerb.

The greenstone slabs are then to be fixed in their position, as shown in Drawing Nos. 4 and 6, the upper iron kerb and ties fixed, and the space enclosed by the greenstone slabs shall be filled with concrete as before between the bearing piles and the two tiers of stone landings, and then to be bedded on the bearing piles and concrete, and the brickwork and masonry of the piers carried up according to the Plan and Section Nos. 7 and 8 to the springing of the iron arched ribs.

When the two abutments and the piers 1, 3, 4 and 5, have been so far advanced, as just to allow of the rapid construction of the piers 2 and 6, by as many hands as the Contractors can employ upon them, these piers Nos. 2 and 6 shall be commenced and proceeded with as rapidly as possible, so that all the piers may be ready for the ribs at the same time.

The present additions to the cutwaters of the old piers on the south side shall not be removed, before the new foundations have been made nearly up to them, at which time, such parts of them, as shall be required for the foundation of 33 feet of the new bridge, shall be taken down with great care, as low as the platform and the foundations combined.

On the Drawing No. , those parts of the foundations of the additions to the old pier, which are interfered with by the new foundation are colored purple.

As soon as 33 feet in width of the new bridge to the south of the old bridge have been completed, the remainder of the present cutwaters and platforms shall be removed, and the driving of the piles for the piers of the new bridge continued for a length of 10 feet to the line of the south face of the old arches. The removal of the old bridge shall then be proceeded with, commencing at the south side and continuing to the north side, and the foundations of the piers of the new bridge put in as before described, as the old bridge is removed.

It is not intended to remove such portion of the foundations of the old bridge as will be included in the foundations of the new, excepting where such a course shall be found necessary, in order to provide space for the piling for the new piers. As the removal of the old bridge on the south side is being proceeded with, a width of 18 feet on the north side shall be boarded off for the foot passengers, and the construction of the new bridge shall be continued, until a width of 42 feet has been obtained, when the removal of the old bridge shall be proceeded with as rapidly as possible.

BRICKWORK.—All bricks to be used in the work, excepting in cases where it shall be otherwise specified, or from time to time required by the Engineer, are to be sound, hard-burned, and well-shaped stocks of the best quality, and they shall be picked for such portions of the work, as the Engineer may determine. The bricks shall be soaked in water, used clean, shall be closely bedded, and the mortar used sufficiently thin in the interior of the work to enable the workmen to flush the joints full without grouting, which is not to be used without the special directions of the Engineer. The bricks in every case are to be well bonded in *old English bond*, and the several courses are to cross joint, so as to form the most sound and perfect work. The *beds and joints* in every course are not to exceed ¼ of an inch in thickness. *The use of batts* in the piers is strictly *prohibited*, and in other parts shall be regulated by the directions of the Engineer. *Hoop iron* rusted provided for the Contractor by the Commissioners of Her Majesty's Works, or paid for according to the schedule of prices attached to this specification, is to be introduced in building the brickwork wherever directed by the Engineer. In all *outside or faced work* the *joints* shall be raked out and *pointed with Portland cement* to the satisfaction of the Engineer and to any extent which he may require. The bricks used in the formation of all *the arched work* are to be of the best, hardest, and most regular paviors, carefully picked and selected for use. The brickwork where backed with concrete shall in every case be *built only to such a height* as may be directed before such concrete is filled up, and where not shown upon the drawings, or herein specified, shall be so built as to be properly bonded with the concrete with hoop iron, or such toothing used for that purpose as the Engineer may direct.

MASONRY.—The several descriptions of stone used in the work shall be selected with the greatest care, and shall be the best of their kind, free from fissures, laminated appearance, discoloration, and all other defects, and shall be laid in the work upon their natural bed. In all cases where the *masonry* is *backed with brickwork*, the masonry and brickwork are to be carried up together, and every care taken to insure the two being properly bonded together as shown on the drawings. The *size of the stones*, where such is not shown upon the drawings or herein specified, is to be regulated and approved by the Engineer, and all courses are to cross joint in a proper and workmanlike manner.

The *retaining slabs of the foundations* between the iron piles and the upper kerb shall be of Carling Nose greenstone, and are to be taken in the estimate in sizes of 8 feet × 8 feet, as shown on Drawing No. 6, and on an average 18 inches in thickness. The *front faces* of the slabs to be *rough axed;* the *inner part roughly scappled;* the *beds and joints fair axed* for a width of 1 foot, and the upper edge to have two *dowel holes* cut in each stone for the *granite kerb*, and a sunk channel 6 inches wide, and 1½ inch deep, is to be formed along the edge of the outer face for receiving the *iron kerb* as shown on Drawing No. 8.

The *granite* for the cutwaters and for the ends of the piers between the points marked A, B, on Drawing No. 8, shall be in stones varying from to feet on the lower bed, and feet to feet on the upper bed; the faces and beds and joints being in all cases fair axed and dowel holes cut at the junction of every joint.

Notwithstanding the coursing shown on the drawings, wherever any stone is used from the old bridge, whether Bramley Fall or Portland stone, the courses shall be regulated in depth and bed according to that part of the bridge from whence they are taken; and the granite courses of the cutwaters and piers shall correspond with them.

The *Carling Nose greenstone,* or other stone which may be adopted in lieu of it *for landings*, shall be of a uniformly hard texture, as free as possible from laminated appearance, and shall be laid in the piers and abutments; the length of the stone being of the full distance shown on the drawings, and the width not less than 5 feet, the joints being crossed. The joints shall be close, and the stones bedded upon each other with lias cement.

The *granite* to be used *for the facing* is to be taken as Aberdeen, Foggin-Tor, Cheesewring, or Haytor granite, and an estimate given by the contractor for each kind, specimens of which are also to be shown by him; but any other granite of a color and quality, which may be approved by the Engineer, and which can be obtained at a lower price, may be used in the work.

Of Lime.—The *lime* used on the work shall be the best blue *lias lime*, specimens of which shall be approved by the Engineer before the quantity be ordered by the Contractor. The lime shall be thoroughly burned, but quite free from core, and shall be used hot from the kiln, where practicable. In other cases, where it may remain a short time on the works, it shall be thoroughly protected from the air and moisture. If any lime core be found after the slaking of the lime, it will subject the Contractor to the rejection of the whole of such lime, which he may have provided for the work.

The *mortar* shall be composed of blue lias lime in 1 part, with 3 parts of clean sharp river sand, free from all vegetable substance and screened, the lime being properly slaked, and thoroughly mixed up with the sand, with no more water than is requisite to bring it to a proper consistency ; it shall be mixed as it is required for the work, and on no account shall any be used which has become partially set, nor is any water to be added to the mortar after it is once mixed. The mortar shall *not be mixed in a pug mill*, but shall in all cases be beaten up to the proper consistency, as practised in former times.

The *concrete* for the piers below high-water mark shall be composed of 4 parts of clean gravel dredged from the river, of no smaller size than shall be approved by the Engineer, and 1 part of well-burnt blue lias lime, properly slaked under sand, and well mixed with the gravel (the water required being supplied from a rose-headed pipe or water-pot), and no more water used than is sufficient to render the concrete solid. All other concrete for the filling in of the abutments, backs of approach walls, and filling in of the spandrils of arches on the Surrey abutment shall be composed of 5 parts of clean river gravel and 1 of lime. The concrete shall be shot, as soon as mixed, into its place in all cases from a height of not less than 12 feet, and shall be rammed with broad heavy pinners where the Engineer may direct, and in all cases brought to a true level surface, as shown upon the drawings, at the completion of any part of the work. No concrete shall be mixed or thrown into place during frosty or very wet weather, or at any other time that the Engineer shall deem it advisable to suspend such operation. In cases where the Engineer may direct, heavy stone or iron slag to be used with the concrete ; such addition to the price shall be made as the Engineer may think reasonable, according to the quantity, quality, and value of such material used.

Filling in behind Walls.—In all cases of filling in behind walls of abutments, embankment, or in other situations on the works, such filling shall be in a state and of a consistency satisfactory to the Engineer, and shall be well rammed and pinned in such a manner as he may think sufficient.

The *cutwaters, piers, and abutments* to the line of the third rib shall be taken as faced with granite in courses varying from 2 feet 6 inches to 3 feet, according to the courses of *Bramley Fall stone*, which may be used from the old bridge. They shall have *fair beds and joints*, according to specimen to be shown to the Contractor, be fairly bedded with lias cement and have *cast-iron dowels*, according to specimen, let into each stone ; the face of the granite work shall be fair axed as shown on specimen.

Of the Piers.—The 10 feet, the 9 feet 9 inch, and the 9 feet 6 inch piers, from the line of the third rib, are to be executed according to the plans, sections, and elevations on Drawings Nos. 3, 4, 5, 7, and 8. When the wrought-iron piles have been driven and the foundations executed as before specified to the top of the greenstone slabs, 2 courses of foundation landings, each 9 inches in depth, shall be accurately bedded in a thin coat of cement on the timber piles and concrete ; the brickwork and Bramley Fall stone facing being proceeded with in the manner specified. The *stones for the facing* shall be in all cases of the depths and lengths of bed shown on Drawings Nos. 7 and 8, and dowelled together with *cast-iron dowels* in each stone. The dimensions of the 10-feet piers above the lower splay are to be extreme width 13 feet, and 106 feet in length, decreasing to 10 feet in width and 100 feet 6 inches in length at the line of the bed plates. And those of the 9 feet 9 inch and 9 feet 6 inch piers above the lower splay 12 feet 9 inches and 12 feet 6 inches in width, and 105 feet 9 inches, and 105 feet 6 inches in length, decreasing to 100 feet 3 inches and 100 feet in length, and 9 feet 9 inches, and 9 feet 6 inches in width respectively at the springing line of the ribs.

Forty-five 2-inch wrought-iron tie bolts 19 feet 6 inches long are to be inserted as shown on the Drawing No. 7, securing the bed plates to the lower foundation landings. Forty-five 2-inch Lewis tie bolts shall also be inserted, connecting the facing stones in the position shown on Drawing No. 7.

After the brickwork and Bramley Fall stone facing has been carried up to the height shown on Drawing No. 7, a course of Carling Nose greenstone 9 inches in thickness, prepared to receive the bed plates for the ribs, shall be laid of the form and dimensions shown on Drawing No. 8, and the cast-iron bed plates properly fixed and secured by the tie bolts before specified.

Between the ribs, the piers shall be continued as shown on Drawing No. 7, brickwork being built up close to the ribs to the underside of the stone capping for a width of 14 inches on each side of the rib, and the intermediate space filled with concrete. The capping of Bramley Fall stone 9 inches in thickness shall be bedded as shown.

TIMBER PILING.—The *bearing piles* in the piers and abutments are to be of sound *English elm timber*, free from sap and all defects, squared, and to be taken in the estimate in all cases of the lengths and dimensions shown upon the drawings, but shall be drawn of such greater or less lengths, as the Engineer shall determine from trial piles to be driven or screwed down on the side of each pier. They are to be from straight trees and shall average 13 inches square, and shall not vary from these dimensions without the permission of the Engineer; and, where driven, they are to be firmly *shod with wrought-iron shoes*, each shoe weighing not less than 30 lbs. and secured to the pile with iron screws 1 inch in diameter.

The *timber piles* for the abutments and piers are to be driven or screwed down to the full depth shown on the Drawing No. 6, or to such less depth, as the Engineer shall certify in writing to be sufficient, and the heads of none of the piles are to be cut off, until they have been inspected and approved by the Engineer or by the resident Engineer. Great care is to be taken in pitching the piles in the exact position shown on the Drawing No. 6, and in driving or screwing them at such angle as may be shown on the drawings. When the piles are hooped and shod, they shall be examined by the resident Engineer or his assistant, and in all cases and at all times driven or screwed down according to his directions. Each pile shall be marked by the Engineer's assistant or resident Engineer before being driven or screwed down, and on no account shall such mark be removed without the sanction of the resident Engineer. In cases where they are driven, a *ram weighing not less than 20 cwt.* shall be used, and the driving shall be continued until each pile will not go down more than half an inch with 10 blows of such ram, falling from a height of 9 feet.

Should, however, any pile be split or otherwise damaged in the driving or screwing down, the same shall in no case be drawn, but shall be cut off and another pile shall be driven or screwed as near to it as practicable, and any such damaged pile shall not be included in the number driven. When the timber piles have been driven and approved by the Engineer, they shall be sawn off at the levels shown on the drawings, or at such other levels as may be directed at the time.

The bearing piles of the piers and abutments for the first 33 feet of the south side of the bridge shall be taken in the estimate as *screwed piles*, and any change from these to *driven piles* in that portion of the work shall be allowed for by the Contractor, according to the schedule; but in the part of the piers and abutments north of the said 33 feet, the *bearing piles* shall be taken in the estimate as *driven piles*, and any change from this to screwed piles shall also be calculated and allowed for.

The *roadway planking* under granite paving and over the cross stays shall be of sound *old ship oak* of English growth 4 inches thick, and is to be *well coated with hot gas tar* boiled 4 hours. It shall then be laid so as to break joint over the cross stays, and strapped to every other cross stay by iron straps 1½ inch × ½ inch, passing across the planking and bolted to their upper flanges by 2 bolts to every alternate cross stay. The planking is to be wedged in at the sides from the upper flange of the ribs and girders by oak wedges, also soaked in hot gas tar; the *joints* between the planking are to be *made water-tight* by running them with hot asphalte, and caulking where necessary at the joints, bolt holes or any other fissures.

On this planking is to be run a coat of Trinidad asphalte or bitumen, or asphalte of equal quality, ¾ inch in thickness, on which the Mount Sorel granite paving is to be bedded, as described under the head of paving.

PAVING.—That part of the *roadway* at each end of the bridge forming the approaches; viz., over the arches and abutment on the Surrey side, and the abutment on the Middlesex side, shall be constructed with 1 foot in depth of concrete and 3 inches of asphalte (which asphalte is not to be included in the contract sum), and the granite paving shall then be laid on the asphalte in like manner to that described over the arches of the bridge.

The *pavement of the carriage-way* is to be of *Mount Sorel granite* in blocks regularly prepared according to specimen, averaging 6 inches in length by 3 inches thick and 4 inches in depth, to be bedded in hot Trinidad bitumen or asphalte on the oak plank, and to be set in the same material; the blocks to be driven close together so that the joints shall not exceed ⅜ inch thick. All the interstices of the beds and joints to be completely filled with the asphalte, so that the pavement shall be thoroughly watertight. The blocks shall be truly bedded and laid to the curve and inclination of the roadway, as shown on the transverse Section No. 10, and according to the Plan No. 11.

The trains for the wheel tracks shall be of Guernsey or Hurm granite in block 15 inches × 6 inches, and in lengths of not less than 5 feet and averaging 6 feet, these blocks shall be rough axed, dowelled, and carefully bedded in hot Trinidad bitumen to the inclination and curve of the roadway.

The trains for the gutters shall be of iron as shown in Drawings Nos. 10 and 11.

The *foot pavement* shall be formed of the *Hopton Wood stone*, in squares not less than 4 feet × 4 feet, 3 inches thick, sawn to a fair surface, and bedded and jointed in hot bitumen upon the oak planking, no joint being more than $\frac{1}{8}$ inch thick. It shall be accurately cut to the parapet of the bridge, and shall be laid with a fall of $2\frac{1}{2}$ inches from the railing to the line of junction with the roadway. The inner kerb shall be laid according to the Plans Nos. 10 and 11, and to the curve and inclination of the footway.

THE ABUTMENTS.—The abutment on the Middlesex side shall be executed according to the plan and sections shown on Drawings Nos. 3 and 4, the piles being driven and cut off to the level shown thereon; the pile heads to be secured together with walings, 9 inches × 4 inches, firmly spiked to the piles with two 10-inch spikes to each pile, the space between being filled with concrete. 2 thicknesses of Carling Nose greenstone landings, 9 inches each, or other stone of equal strength, shall then be fairly bedded on the piles and concrete, and the brickwork and stonework of the abutment shall be carried up, the space between the brick walls being filled with concrete after every 3 feet of wall being built.

The *retaining walls* of the Middlesex approach and abutment shall be executed according to Drawings Nos. 2 and 4 of the dimensions thereon figured. The stone of the present wing walls being used for the facing of the south wall of the Middlesex approach, which has first to be executed.

The *parapets and coping* of the retaining walls of the Middlesex approach, and of the arches and retaining walls of the Surrey approach, shall be of *Portland stone* from the old bridge, and of the form and dimensions shown on Drawing No. 2 and Drawing No. 3 respectively. The backing and filling in behind the concrete of the abutment and walls of the approach shall be dredged from the river, unless the contractor shall be provided with other suitable materials for that purpose at the same rate.

Of the Surrey Abutment.—The abutment pier at the end of the bridge on the Surrey side, and the two arches of the approach, are to be executed according to Drawing No. 5, and of the several dimensions thereon figured.

The abutment pier, the intermediate pier, the abutment of the extreme arch, and the two arches for the interway, are to be of the best brickwork, excepting the voussoirs of the arches for the waterways, the face course of which shall be of Bramley Fall stone, and the remainder of the soffit to 15 feet from face of bridge shall be of Portland stone (from the additions to the old piers). The walls of the pier throughout up to 2 feet above high water, to be all of Bramley Fall stone. The 55 feet intervening of the arch, from 2 feet above high water line, shall be constructed of the best brickwork, of pavior bricks, as before specified, with joints not exceeding $\frac{1}{4}$ of an inch in thickness. The spandrils shall be filled up solid with concrete, with such layers of rusted hoop-iron as the Engineer shall direct during the progress of the work.

IRONWORK.—The *wrought-iron work* is to be in all cases ot the dimensions shown on the drawings or herein specified, and, should any part exceed those dimensions, the Contractor will not be paid for any such excess, and any part which will not agree with the dimensions given will be rejected. All the wrought-iron work is to be double fagoted, either hammered or rolled, and is to be capable of bearing a strain of 14 tons to the square inch, with a permanent extension in length of not more than $\frac{1}{400}$ of an inch per foot.

All *nuts and screws* used for the works of this contract are to be clean cut, and made to fit well. All bolts to be made from one piece, and all above $\frac{1}{8}$-inch diameter to be turned. All bolt holes to be drilled. The *rivets* are to be of iron, of the specified quality, and capable of bearing the strain before mentioned.

All the wrought-iron work shall be coated while hot with linseed oil, and when dry shall receive 2 coats of red lead (of a quality approved by the Engineer), previous to leaving the works.

All the work shall be executed and put together in the best possible manner. The webs of the girders shall be made to abut fairly against the flanges, and the rivet holes of the several pieces connected together shall be made accurately to correspond. The abutting flanges for the joints of the main ribs shall be truly planed, and made to bear throughout their whole surface.

Cast-iron.—The whole of the *castings* are to be *run from the cupola,* and to be cast with a head of not less than 5 feet of such mixture, and to be as the Engineer shall approve after trials made at the cost of the Contractor for that purpose, and are to be *clean, sound and perfect* castings. They shall be *coated while hot with hot linseed* oil, or shall be dipped in vessels of hot oil, and shall remain therein a sufficient time for the oil when cold to form a hard varnish on the surface; they shall then be painted with 2 coats of paint, approved by the Engineer before being removed from the workshops.

All the castings shall be subject to the inspection and approval of the Engineer, or person appointed by him.

A bar 5 feet 6 inches long and 1 inch square shall be cast upon each casting, and proved by a transverse strain on a bearing of 4 feet 6 inches, and no casting will be received or be permitted to be used in the work, the bar from which shall break with a less weight applied on the centre than 600 lbs., and with such gradual deflection as may be approved. In those castings which exceed 1 inch in thickness, the bars shall be run of the thickness of the thickest part of the castings, and the breaking weight shall be increased in proportion to the sectional area, *i.e.*, in direct proportion to the width, and as the square of the depth.

The castings are to be in all cases of the dimensions shown upon the drawings furnished for the purpose, and should they exceed the dimensions, the Contractor will not be paid for any such excess; and, in the event of the castings not being equal to the dimensions, they shall be rejected. Notwithstanding the inspection made under the orders of the Engineer of the several cast and wrought-iron work during the time of its preparation, the Engineer will reserve to himself the right of objecting to any part of the ironwork on its arrival at the Bridge.

All the bolt holes of the cast-iron work shall be drilled. All the joints of the cast-iron work shall be planed or otherwise brought to a true surface.

The Contractor shall be at the expense of providing all necessary machinery and labor for ascertaining the strength and quality of the wrought and cast iron, and for carrying out all other conditions of this specification.

Of the Bed Plates for the Ribs.—The bed plates of the cast-iron ribs, as shown on Drawing No. 8, are to be of the dimensions therein figured, and 1½ inches in thickness. The stone landings shall be sunk for them to a true surface, and the plates shall be fairly bedded on a layer of bitumen, and thick spread on the sunk faces of the stone landings. They shall be tied down with 3 wrought-iron bolts or cast pins, as shown on the drawing, 20 feet long, and 2½ diameter, and secured to the top with 2 nuts and washers.

The *cast-iron ribs* for each arch are to be of cast iron of the quality specified for the length marked A.A. on the Drawing No. 9, and are to be cast of the forms and dimensions shown on the drawings, or such other drawings as may be hereafter furnished, the sectional area of the ribs in each of the arches being as shown at the point, where the wrought and cast iron parts join. And they still increase in area towards the springing as shown on the drawings. They shall be carefully fitted before leaving the foundry, and in their places at the Bridge as shown on Drawing No. 9.

The corresponding portions of the adjoining arches in each pier are to be proceeded with simultaneously, to equalize as much as possible the pressure on the pier during the fixing of the arches; and such permanent tie rods shall be introduced, to connect the two corresponding segments of the ribs, as the Engineer shall direct, which tie rods shall be paid for as an extra.

All the abutting joints shall be *planed* or *chipped* and *filed* to a fair surface, strictly at right angles to the direction of the rib at the line of joint; all the *joints shall be coated with bitumen*, and each joint put together with a true bearing, with case hardened keys of the best iron, inserted as shown on Drawing No. 9. The lower arris of the joints shall in all cases be slightly champhered to avoid any bearing on the edge.

The *spandrils* are to be taken in the estimate according to the drawings and the dimensions thereon shown, but a price is to be given for spandrils of an ornamental character, similar to that of the parapet.

The *parapet and cornice* are to be estimated for according to the Drawing No. 15, and of the elevation section details and dimensions thereon shown. They are to be of cast iron of the quality specified, and to be in all respects good and clean castings.

Of the Wrought-iron Piles for the Foundations.—The *iron* used for the piles, which form the casing for the foundations of the piers and abutments, is to be of boiler plate iron, equal in quality to good Yorkshire plate iron, and capable of bearing a tensile strain of 22 tons per square inch without breaking. The piles shall be constructed of the form and dimensions shown by the Drawing 13, they shall consist of 2½-inch plates, 2 feet wide, and 16 feet long, rolled in 1 length, with intermediate pieces 1 inch thick, and of the width and length specified on the drawing, and strengthened with 2 angle irons 6 inches × 3 inches. The whole to be riveted together in the best manner with ⅞-inch rivets, placed 4½ inches from centre to centre. The intermediate pieces and the angle iron to be rolled in 1 length. T iron may be substituted for the angle iron.

The shoes and heads of the piles shall be forged and riveted as shown by figures 2 and 3, Drawing 13, the head of every 4th pile being modified to allow of the insertion of the piece shown in section and elevation in figures 4 and 5. These pieces are 6 feet long, and of the construction, form, and dimensions, shown by the drawing. The iron for them to be of the same quality as that of the piles. They are secured each to its respective pile by 4 one-inch bolts; and the bottom of each, as also the top of the piles into which they fit, is to be chipped, so that they shall bear equally throughout their surfaces, and the joints be good and close. Each pile, when finished, shall be heated to 350° Fahrenheit, and *dipped* at this heat *into hot linseed* oil of approved quality, and shall remain in sufficient time for the oil, when the pile is taken out and cooled, to form a varnish. The pieces, which join on to the top of the piles, are to be glazed. The hollow parts of the piles and other pieces to be filled with bitumen of Trinidad, or such other asphalte as shall be approved by the Engineer to the Commissioners of Her Majesty's Works. The piles shall at all times during their construction be subjected to the inspection of the Engineer, and any other party he may appoint, and no pile will be received, which has not been passed by the Engineer or his assistants previous to its leaving the works. The *apparatus for proving* the iron shall be provided by the Contractor, whenever the Engineer shall direct such proof to be made; and in the event of any of the plates sent not standing the required test, the Engineer shall be at liberty to reject all the piles made from such plates.

Of the Wrought-iron part of Ribs, Girders, and Cross-stays.—Those parts of the ribs for each arch, shown on Drawing No. 9 from B to B, are to be of wrought iron of the quality before specified, and of the form and dimensions shown on the drawings. The ribs of the centre arch shall contain at the crown 62 feet 5 inches of sectional area. Of the 2 adjoining arches, 59 square inches. Of the 2 next arches, 54 square inches. Of the 2 next abutments, 48 square inches. Increasing in area towards the point of junction with the cast-iron portion of the rib, as shown on the Drawing No. 16.

The *cross-stays* shall be made of iron of the same quality and strength as the wrought-iron part of the ribs, and shall contain a sectional area in the upper and lower flange of 6 superficial inches, and shall be made according to Drawing No. . They shall be tightly wedged up against the ribs and girders, any space gained by such wedging being filled up with washers of sufficient thickness, and they shall then be properly bolted to the ribs and girders with four ⅞-inch bolts and nuts, as shown on the drawing.

Wrought-iron Cross Girders.—The cross girders marked on Drawing No. 1 shall be of the form and dimensions shown on drawings and formed with diagonal bracing instead of a centre web. The lower plate of these girders shall be proved with a tensile strain of 14 tons per square inch, subject to the elongation specified, before it shall be used in the girder.

Of the Bolts, Nuts, and Washers.—All the bolt holes shall be drilled; the bolts accurately turned to fit the holes; the threads of the screws and nuts carefully cut and the washers turned. The bolts, nuts, and washers, shall in all cases be case hardened. This description will apply to all joints, bolts, nuts, &c., throughout the work, both of the cast and wrought-iron parts of the ribs, excepting that their form and proportion will be varied to suit the sectional area of the ribs, and for which, when requisite, enlarged drawings will be given.

Dimensions for the Spans, Headways, and Curves of Arches.—The length of the bridge at the level of the springing line, is to be 810 feet from the face of the Surrey Abutment, and the spans and headways above Trinity Datum of the several arches, are as follows:

Centre arch 120 feet span; 20 feet headway above T. D.

1st. Arches from centre arch 115 feet span; 19 feet 3½ inches headway ditto.

2nd. Arches from centre arch 104 feet 6 inches span; 17 feet 7½ inches headway ditto.

3rd. Arches from centre arch 94 feet 9 inches span; 16 feet headway ditto.

The curve for the intrados of the centre arch is to be parallel to an ellipse of the diameters of 109 feet and 25 feet.

The curve for the intrados of the arches, first from the centre arch, is to be parallel to an ellipse of the diameters of 104 feet 6 inches and 24 feet.

The curve for the intrados of the arches, second from the centre arch, is to be parallel to an ellipse of the diameters of 95 feet and 21 feet 9 inches.

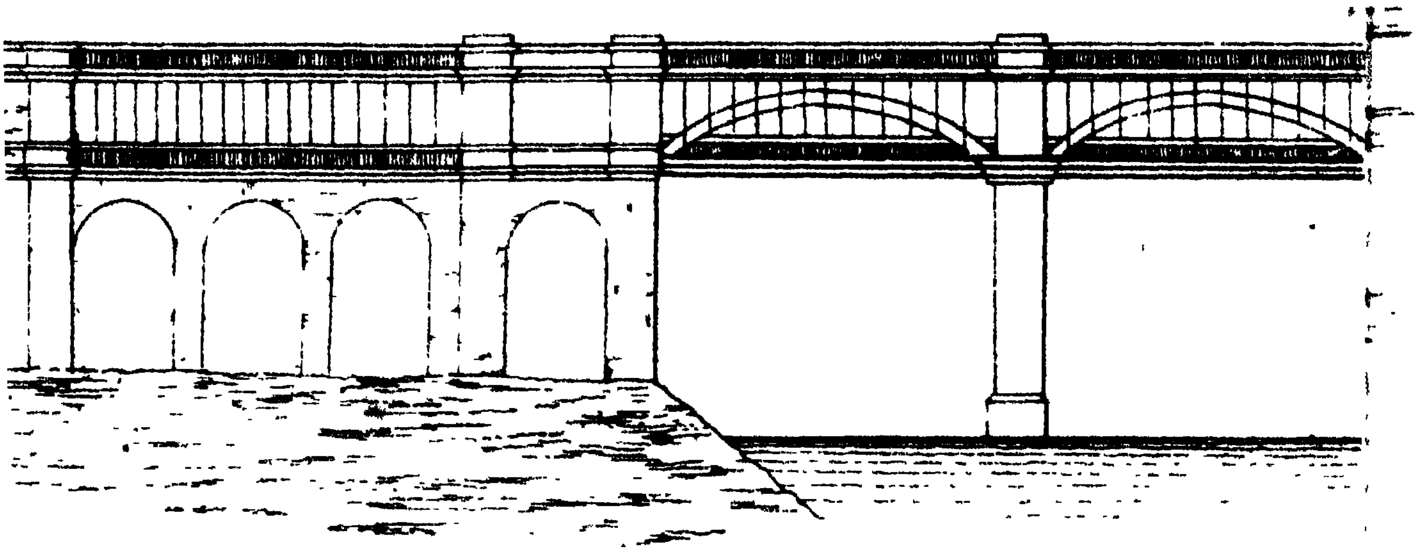
The curve for the intrados of the arches, third from the centre arch, is to be parallel to an ellipse of the diameters of 86 feet and 19 feet 3 inches.

The span and headways of the arches are to be verified by the Contractor, as stipulated in the foregoing clauses.

PAINTING.

The bridge shall be painted of such color as the Engineer may approve in 3 coats and varnished.

N.B.—In execution granite was used instead of Carling Nose stone, as blocks of sufficiently large sizes could not be had.



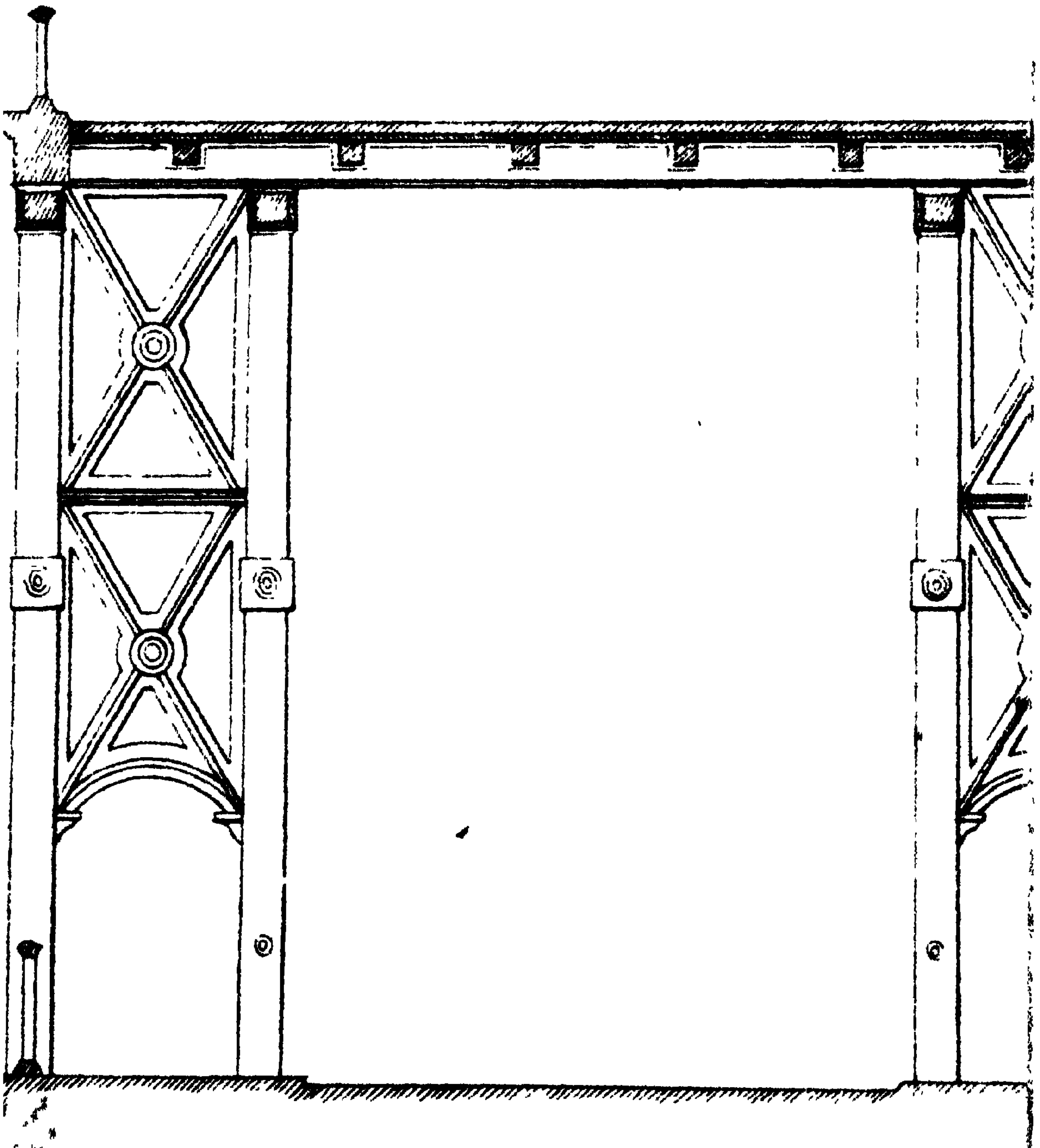


FIG · 2

Specification for the Masonry and Ironwork of the HIGH LEVEL BRIDGE, NEWCASTLE, *on the Newcastle and Berwick Railway.* ROBERT STEPHENSON, M.P., *Engineer.* 1847.

Foundations of River Piers, &c.—The *piling* is to consist of a series of piles of whole balks of timber, which are to be driven at the distances apart and to the depth shown on the plan; an outer row of gauge piles is also to be driven with proper walings, and a row of sheet piling of half balks of timber, grooved and tongued, driven in between, with a second similar row outside to form a *cofferdam.* The whole of these piles are to be *shod with proper wrought-iron shoes,* and properly *hooped,* and are in every case of the main piles to be driven till they reach the rock at the depths shown on the section. The interior space between the two rows of sheet piling is to be excavated to the depth shown on the section, and filled in with well-tempered clay puddle well rammed down. On the completion of this dam, the interior space is to be excavated to the depth shown on the plan, and when excavated this space is to be filled in with cement, made of such a mixture of Lyme Regis mortar and cement as to insure its setting hard. *On the heads of the piles* are to be placed *sills* of whole balks of timber extending to the sheet piling, tenoned into the heads of the piles, and with a ragged bolt driven into each, the space up to the heads of these sills being filled in with cement concrete, as above described. On these sills is to be laid a double row of 3-inch Memel deals, laid herringbone, and spiked down with 2 feet 10 inch spikes at each crossing of a sill. On this planking the masonry is to be laid, and when carried above the level of the low water, the outer row of sheet piles may be drawn, and the inner row cut off at the level of the spring-tide low water, a double walling being carried along below the level of low water to secure the head of the sheet piling, as shown on the plan. The whole of the piles and timbers to be used for these foundations to be of the best middling Memel timber.

Patent Pile Driver.—The Company will provide one of Nasmyth's patent pile-driving engines for the purpose of driving the piles for the foundations of the river piers. The pile machine will be delivered to the Contractor at the Gateshead Station, and he will have to erect the same on craft for the purpose of the river piling, and provide all the requisite tackle and craft for this purpose. A person or persons will be appointed by the Company to attend to the engine at the expense of the Contractor, who will be required to deliver the engine to the Company in a perfect condition, as soon as the piling operation is completed.

Fenders—Pumping.—Provide all necessary fenders for preserving the dam and works during the construction of the bridge, and provide all pumping, that may be necessary throughout the whole of the foundations and works.

Removal of Buildings.—Take down all the buildings in the line of the works, and carefully convey the same to the field adjoining on the south of the Gateshead Station, or to such other point as may be directed, not being further off, and then carefully stack the same as may be directed.

General Excavation of Foundations.—Excavate the whole of the foundations necessary for carrying out the work to the depths shown on the different plans, or to such other depths as may be found necessary, and he will be required to remove and cart away the same to some depôt to be provided by the Contractor.

MIDDLE PIERS.

Stone.—The external ashlar work to be of the best beds of stone and of uniform color, from Pensher White House, or Mr. Cail's quarry near Gateshead, or from other quarries to be approved.

Masonry.—The *height of the courses* from the commencement of the work to the top of the cutwaters to be not less than 2 feet, or more than 2 feet 3 inches. From that level to the top of the base to be not more than 2 feet nor less than 1 foot 9 inches. Above the base to the underside of the cornice not less than 18 inches, nor more than 1 foot 9 inches. The upper part of the piers at the roadways to be in courses not less than 16 inches nor more than 17½ inches. The sets-off at the top of the base at G to be in one course—viz., 2 feet 3 inches high; and the friezes 1 foot 2 inches and 1 foot 6 inches high, each as figured on the elevations.

The *external ashlar* to be worked header and stretcher stones alternately, well bonded and lapped, and no stone to be less on the bed than the height of the course, and the ashlar face to average half the thickness of the walls at the several stages of the work as figured on the plans—viz., at the lower part of the piers on *a*, *b*, the average thickness to be 3 feet 8 inches (except at the cutwaters which are to average 3 feet); at *c*, *d*, to be 2 feet 11 inches; at *i*, *k*, to be 2 feet 4 inches, and the upper part of the piers at the roadways to be wholly of stone as used in front ashlar facing, from the underside of the lower cornice to the top, and of the dimensions figured in the plans in large-sized stones, and cramped together with copper cramps.

Lengths of Stones in external Ashlar.—No stone throughout to be in length less than twice the height of the course, except in closers and headers, which are not to be less than once and a half the height.

That part of the work, which receives the cast-iron shoes for the segment ribs, to be in large bedded stones, not less than 20 feet, area 1 foot 11 inches high, and of similar stone to external ashlaring, properly prepared for the cast-iron shoes and bolts. Also prepare where required other parts of external ashlar for bolts, &c., and form apertures for access to same, closing the openings with moveable ashlar to match.

Face Work.—All the external work to be tooled agreeably to specimen, and the cornice and fascias below ditto finely tooled and neatly executed also, as per specimen. *Beds and Joints* to be dressed fair and all the stones to hold their dimensions in full at every part, and the back of the external ashlar to be similarly worked to fairly unite with the backing of the walls. Form the small *reveals* or sinkings round the archways, also *chases* for rain-pipes, sinkings, bolt holes, &c., for the segment ribs and reveals for cast-iron pillars, as shown. The *ashlar* in the cutwaters to be of large sized stones, well jointed and bonded in with the piers, and securely cramped to proper bond stones built into the rubble core. The *moulded cornices* to be scribed to the cast-iron cornices, as implied in drawing sheet No. 11, and sinkings, &c., formed for iron railing where necessary.

Internal ashlar or backing to be of stone from the same quarries as described for the external ashlar. All the beds and joints to be dressed fair, and the faces next the front ashlaring also dressed fair to back up close to the same with quarry face inside. The *height of courses* to be as described for the front ashlaring, or in 2 courses to level up with a course of external ashlar, and no course to be less than 8 inches thick. All the backing to be well bonded, closely jointed, and worked in header and stretcher stones alternately; properly prepare the backing for fixing the cast-iron work, rain-pipes, &c., &c., where required. *Oversail* where shown on the plans, and build in 2 courses of 9 inches York landings at the levels shown on the drawing, perforated for rain-pipes or other ties, as may be directed by the Engineer. Cover the top of the base at archway with 9 inches York landing, tooled, weathered, and joggled, and set in cement.

Rubble.—Stiffen the base of the piers with good rubble masonry in mortar of Lyme Regis lime to 6 feet above high water.

Mortar.—The external and cross walls of the base of piers to be built in mortar of Lyme Regis lime to 6 feet above high water; and the external ashlar face to be pointed in best Roman cement to the same level; the rest of the work to be in mortar from Fulwell Lime kilns and river sand in proportion of 3 to 1. All the mortar to be ground in a pug mill. Fill in above the archway with rubble as described for base of piers, but with Fulwell lime.

LAND ARCHES AND FOUNDATION AT NEWCASTLE END OF BRIDGE.

36 *Feet Archway over "the Close."*

The *external ashlar* of the piers to be built of stone as before described, and to average half the thickness of the walls in header and stretcher stones the height of the courses as before; beds and joints, and the external face work, together with all necessary preparation for fixing the ironwork, to be the same as already described for the middle piers, excepting the jambs of the archway, which are to be hammer dressed with tooled margins, toothed in the manner of quoins, and to be executed agreeably to Drawing No. 18. The backing and cross walls to be of stone as before, with oversailing and York tie as shown. The upper part above the archway from the underside of the lower cornice to be wholly of stone, as used in front ashlar facing, with tooled face as before, and of the dimensions figured on the plans; the lower pedestal to be built hollow or with rubble core as may be directed, as also the pier on the curved side. The *arch* to be 2 feet thick at the crown part, and 2 feet 6 inches at haunches, with hammer-dressed face, well jointed of stone as external ashlar with tooled bands toothed in the manner of quoins, agreeably to the dimensions shown in the Drawing No. 18. Fill up the haunches with rubble masonry to the required levels, and prepare the walls where required for rain-pipes.

The *springing walls* to be built of external ashlar stone, and in the manner implied on Sheet 19 in header and stretcher stones, alternately filling in the middle stones with the ashlar backing as before described. The height of courses as before. The face work in the jambs of the arches between the piers to be hammer dressed, other face work tooled as before described, with hammer-dressed arches, 1 foot 9 inches and 2 feet 3 inches thick, and tooled bands thereto toothed as before. Fill up the spandrils to the required height with rubble. Oversail where expressed, arch over the voids and connect the piers at the foot in the manner shown under the arches of the middle piers on Drawing No. 8; prepare for rain-pipes and form the small reveals or sinkings round archways as shown on the drawings. The end springing wall to have the external face in ashlar built as before described, and rubble backing as implied on Drawing 12.

The corresponding work on the Gateshead side to be similar to the preceding.

Build the foundation for the stone bases to receive the cast-iron pillars, as shown on the plans, in good rubble masonry, 3 feet 2 inches thick, stepped up where implied on Drawing No. 17 for bases, which are to be 3 feet 2 inches wide × 3 feet 6 inches long × 18 inches thick for the internal range, and 3 feet 4 inches wide, 3 feet 6 inches long, and 14 inches thick for the external ditto; the latter to be tooled on the face to match the frieze, and the whole of the blocks to be properly prepared for fixing the bases of cast-iron pillars.

FOUNDATIONS AT ENDS OF BRIDGE BY GATEWAYS.

Build the external walls, agreeably to the plans No. 12 and 21, of stone, as before described for front ashlar, which is to average half the thickness of the walls, with cornices, tooled face and labor to beds and joists, as before described; the above to be well bonded in with the backing, which is to be of good rubble masonry. *Fill in above the arches* and between the sleeper-walls with dry rubbish, to receive the concrete foundation for the wood paving, which is to be 6 inches thick on proper concrete foundations 15 inches deep, and of patent to be approved, with fir kerb 12 inches × 6 inches. The *wood paving* to terminate at the end of the walls over the large archway at the line shown on the Drawing No. 14; concrete 9 inches thick to be put over that part of the arching, which lies beyond the boundary of the bridge. The *curved parts* beyond the boundary of the bridge at the end of the bridge to be finished with metalling upon the filling, 12 inches thick, as implied on Drawing No. 14. Provide and fix *proper centring* for the land arches, and other arches in the middle piers where required.

Work generally.—All stone to be placed upon its natural bed. All projections weathered and dripped, or throated. To form all skew and curved face so requiring. Also all arch joints, reveals, or sinkings to jambs of archways, chases, and perforations for rain-pipes and sinkings, bolt holes, and all other work, that may be necessary for fixing the whole of the ironwork of the bridge.

Provide and fix all necessary *copper cramps*, plugs, dowels, lead, and cement, &c. that may be required to fix, and securely set the whole of the Mason's work. Build in all bolts, rain-pipes, iron, or other ties; properly bed and set the cast-iron shoes, and perform all works connected with the fixing of the ironwork throughout.

Specification of WORKS *required to be executed by the Honourable East India Company for increasing the Supply of Water and improving the Drainage at their Depôt,* WARLEY BARRACKS, *near Brentwood, Essex, agreeably with the accompanying Drawings, marked "Supply of Water and Drainage," W. D. Nos.* 1 *and* 2. JAMES SIMPSON, *Engineer.* 1845.

Description and Construction of Works.—The works in this specification comprise the whole of the labor, tools, implements, materials, shoring, carriage, and other things requisite to sink a well, and to excavate the ground for and build a small reservoir or tank on the west side of the barracks, and to excavate the trenches for and build about 1350 feet of main sewer, with subsidiary sewers and cesspools, for draining the barracks; and to excavate the trench for and build about 1750 feet of barrel drain and a cesspool for draining the men's cottages on the common; likewise the whole of the filling in, and making good, and removing all surplus earth and materials.

Materials.—*Bricks.*—The bricks are to be the best new, hard-burnt sound stocks, fit for water work.

Mortar.—The mortar is to be composed of 1 part of good, fresh-burnt, hydraulic lime, measured before slaking, to 4 parts of clean, sharp river sand, worked in a pug mill, and properly incorporated.

Cement.—The cement is to be of the best quality, and used fresh from the kiln, in the proportions of 2 parts of cement to 1 part of clean, sharp river sand.

Landings.—The landings are to be 3½ inches sound hard Yorkshire stone, free from imperfections.

Iron.—The cast iron in the pipes, girders, plates, and sluice is to be of cold blast, not inferior to No. 2 pig second melting.

Puddle.—The clay for the puddling is to be of a good tenacious quality, and mixed in the proportions of 3 parts of clay to 1 part of clean, sharp, screened gravel, to be properly tempered and worked.

The *Well* is to be sunk about 200 feet from the west side of the barracks, to a depth of 30 feet from the present ground surface; the internal diameter is to be 9 feet in the clear, steined with brickwork 9 inches in thickness, the lower 15 feet laid in dry, and provided with the necessary wooden kerbs, and the upper 15 feet set in mortar. The top of the well is to be carried up 1 foot above the present ground line, and covered with cast-iron plates 1 inch in thickness (with ribs on the upper surface), to rest on 2 cross girders, each 1 foot in depth by 1¼ inch in thickness, with top flanges, the plates being covered with gravel, as shown on Drawing No. 2.

A 6-inch *cast-iron pump*, of approved construction (with the necessary suction and rising main pipes, handle, bucket, clack, and other appurtenances) is to be provided and fixed substantially in the well, at the proper height for the tank.

Tank.—The ground for the tank is to be excavated to a depth of 2 feet 10½ inches below the present surface, to receive a floor of clay puddle 1 foot 6 inches in thickness. The bottom of the tank is to be laid with bricks on edge set in mortar; and 9-inch walls, with 6-inch footings, are to be built in mortar to a height of 5 feet 6 inches in the clear within the tank, finished with bricks on edge set in cement, and cambered to a radius of 20 feet, as shown on Drawing No. 2. The pump and tank are to be protected by a rough park paling 4 feet high, and a gate in it 3 feet wide with wrought-iron hinges, lock, and key. The clay puddle is to be from 18 inches to 12 inches thick, and carried to the height of 6 feet from the floor or foundation, all round the tank. The ground is to be levelled to the top of the tank, and formed as shown on Drawing No. 2.

Pond.—The sides of the pond marked E, on W. D. No. 1, are to be excavated to an additional breadth of 4 feet where necessary, to make the pond of uniform and regular shape, and the entire area is to be excavated to a further depth of 2 feet. A floor of clay puddle, 1 foot 6 inches in thickness, is to be laid over the whole excavation, worked in 2 courses, and finished at the sides with upright puddling 2 feet in thickness at the bottom, and 1 foot 6 inches in thickness, at the height of 12 inches under the present ground surface. A layer of screened gravel, 9 inches in thickness, is to be laid over the floor puddle, and the excavation or angles of the upright puddling are to be filled in with gravel of the same description round the sides, and trimmed to a slope of 1 foot vertical to 1½ foot horizontal, finishing at the top a breadth of 4 feet within and over the upright clay puddling.

Pipes.—The trench is to be excavated, and about 170 lineal feet of 18-inch cast-iron pipes are to be laid and jointed from the tank to the beginning of the main sewer, near the Hospital; each 9 feet length of pipe is to weigh not less than 10 cwt.

A cast-iron 18-inch *screw sluice*, properly fitted with paddle, gun-metal spindle, and facings, is to be fixed on the end next the tank, with a bell mouth-piece built into the tank, and provided with false spindle, cock-box and key complete.

Sewer and Drains.—The ground is to be excavated for the trench, and a sewer is to be built of the cross sections shown on Drawing No. 2, extending from the western side of the barracks to the south-eastern angle of the Company's property, with a regular inclination throughout its entire length; the inner 4½-inches ring at the bottom is to be built in cement, and the rest in mortar.

A *cesspool* is to be built at the termination of this sewer, 6 feet internal diameter and 12 feet depth in the clear, to be covered with stone landings and 1 foot of earth; the drainage is to lead into the present ditch through the wood. *Barrel drains* of the sizes marked on Drawing No. 2 are to be built of 4½-inch brickwork, the lower half set in cement and flushed, and the upper half set in mortar in the directions marked by the red lines with regular inclinations from the present drains or cesspools, as the case may be, to the new sewer. These drains are to enter the sewer at 1 foot above the bottom, and be properly connected with it in all cases. The present drains are to be made to communicate with the new drains, wherever they intersect with available falls, and the present main sewer is to be stopped where it crosses the new sewer, and to join it as shown on the Section W. D. No. 1.

The *ground is to be excavated* for the trench, and a *barrel drain* of 18 inches internal diameter is to be built of brickwork 9 inches thick (the lower half set in cement and the upper half set in mortar) from the drain at the men's cottages to the eastern boundary of the Company's property, laid with a regular inclination as shown on the drawings. The end next the cottages is to be joined to the present drain at a proper level, and a cesspool, 6 feet internal diameter and 10 feet deep, is to be built of 9-inch brickwork set in mortar at the opposite end next the wood, and covered with stone. Landings and 1 foot of earth and an outlet to be built, leading into the present open drain in the wood.

When the drains, tanks, and other works are completed, the earth is to be filled in over and round them and well rammed, and the surface of the ground in the barrack yard and other places is to be left fair and even as at present. The foundation walls of the buildings on the present drains and cesspools, through which any of the drains pass, are to be cut away where necessary, and the brickwork made good when the drains are finished.

Specification for VIADUCT, EARTHWORK, CYLINDERS, &c., *for Bardney Bridge, Great Northern Railway.* W. M. BRYDONE, *Engineer.* 1858.

THIS contract comprises the providing of all material, labor, and workmanship necessary for the erection and entire completion of the several works hereinafter named, and which are to be paid for by the Great Northern Railway Company at the schedule of prices attached hereto.

The whole of the surplus earth from the foundations is to be put into the embankments at the ends of the viaduct.

The sections of the ground shown on the drawings exhibit the strata as they are believed to occur, according to the borings and trial holes which have been made; but the ground will vary, and the Company do not guarantee the accuracy of those results of borings.

The Contractor will be required to found each pier, abutment, or cylinder, as the case may be, upon the bed of coarse gravel which exists, and no allowance in addition to the scheduled prices will be allowed for any additional depths, that the Engineer may require the Contractor to carry the foundations. The *piers and abutments* are to be commenced by 2 courses of the best Yorkshire stone from the neighbourhood of Bramley. The bottom course is to be founded quite level, and the bed of the second course is to be truly prepared; they are to be set in mortar, as hereinafter described, and the upper surfaces of the upper courses duly dressed to receive the brickwork.

The *viaduct* is to be built of bricks, which are to be of the best, that the district affords, sound, well burnt, and hard; and all bricks, which are in the opinion of the Engineer inferior to the sample to be seen at his (the Engineer's) office at King's Cross, are to be rejected, and *are not* to be used in the works.

The whole brickwork is to be close jointed, and of the best workmanship; the arches are to be bonded work throughout; they shall not be built in rings. The *mortar* used in the whole viaduct and brickwork shall be composed of the best Barrow lime, in the proportion of 1 of lime to 2 of clean sharp sand, the whole to be perfectly mixed in a mortar pan, under rollers which shall be driven by steam power. The Railway Company will deliver to the Contractor in trucks at Bardney Station, free of charge, a reasonable and sufficient quantity of fine gravel and ashes for all the mortar.

In *excavating* for the piers and abutments, the earth shall be close planked and strutted, the water pumped out, and the excavation taken to such depth as the Engineer may determine in each case. The whole of the foundation of each pier or abutment shall be laid at one time; they shall be of the size and form shown on the enlarged drawings, and the brickwork shall be carried up evenly and at the same height at once over the whole of each pier or abutment, and the work shall be grouted and larried at every second course, and the earth filled in and well punned around each pier and abutment, up to the level of the present ground, as the brickwork rises.

The Contractor shall, at his own cost, remove such part of the present timber structure as interferes with his operations, but the whole new work shall be advanced towards completion, before the present building is interfered with, and the Contractor shall be bound to do the last of the work at such time, as the Engineer considers least inconvenient to the traffic.

The *coping* is to be tooled Bramley-fall stone, no length less than 3 feet. The *cast-iron water-pipes* and caps are to be provided and very carefully fixed by the Contractor.

Asphalte.—The whole of the arches, inner spandril walls and spandrils are to be asphalted in the most perfect manner, not less than 1 inch thick. For this work the Contractor is to employ Mr. Wright, of 32, Bucklersbury. The asphalte is to be a preparation of Trinidad asphalte and pitch, to be boiled, put on hot, and spread in successive layers of ¼-inch thick, until it reaches 1 inch in thickness; this material and work is to be done to the entire satisfaction of the Engineer, the price of the same being by this specification guaranteed by the Company to the Contractor at the price per yard superficial named in the schedule. The Contractor is to form the southern embankment or approach, as shown by the drawings and cross sections, from the foreshore of the river under the present viaduct.

The Contractor is to form the northern embankment or approach with stuff to be brought by railway from Bardney Station, at such precise spot as the Engineer may determine. The Contractor is to lay in any *temporary rails* that may be necessary for this purpose, the Company providing rails, old sleepers, fastenings, waggons, guard, flagman and locomotive power.

The Contractor is to *provide and sink the* 8 *cylinders* at the precise spots shown on the plan. The Contractor will be at liberty to adopt the plan of dredging through the water inside the cylinders and thus sinking them, or any other method he may prefer; he will be bound to sink them until a bottom is reached, which is quite satisfactory to the Engineer, whether the same be lower than shown on the drawings or not. The different lengths of the cylinders shall fit truly upon and be bolted to each other. When the cylinders have been sunk to the depth directed, concrete of Portland cement 2 feet in thickness shall be sunk in boxes through the water all over the bottom inside each cylinder; and when this has set, the water shall be overcome by pumping by steam power if necessary, and brickwork in mortar shall be well built up from the bottom to the top of the cylinders. Should the plan here proposed for sinking the oval iron hollow piers and for getting in the brickwork be found insufficient, the Contractor shall be at liberty to adopt such other means as he may prefer, but no extra payment will be made over and above the specified rates.

Proof.—The Contractor shall, at his own expense, load each pair of cylinders when fixed by him with iron rails, to be provided by the Company at Bardney Station, to a weight equal to twice the weight of the greatest load that can at any time come upon them, including engines, carriages, bridge, rails, beams, floor, &c.

The small *wrought-iron girders* across the pairs of cylinders are to be provided and fixed by the Contractor in the most perfect manner. The *connecting pieces* between the pairs of cylinders are to be provided, fitted, and fixed, in a true and perfect manner. The whole of the abutments shall be completed; the piers shall all be built up to springing level; the earthworks shall be completed, and the cylinders shall be sunk in place and complete, and the brickwork within them shall be built up to the top, and the whole work shall be ready to receive the large iron girders and bridge "top" (which are not included in this contract) before any of the arches are begun.

A single line of railway (the down line) only will then be used by the Railway Company; and the Contractor is then to commence removing so much of the beams and floor of the present viaduct, as impede the turning of the arches, and the completion of the brickwork (excepting only such part of the present viaduct, as is necessary for the single line of way, which is to be used on the timber building). Portions of some of the brick arches under the present down road are to be left unturned, until after a single line has been laid over the new viaduct; and those portions are then to be added to the satisfaction of the Engineer, and the Contractor shall be responsible for joining the work as perfectly, as if the whole arch had been built in one.

The Contractor is to be responsible for the perfect soundness of the new structure, and is, at his own cost, to make good any failure of the new viaduct, or other part of the works, proceeding from any cause whatever, until three months have elapsed after the passing of traffic over the viaduct, and the Contractor is to deliver up the whole of the works executed by him in three months, after the traffic has been turned over the viaduct in a perfectly sound state, and to the satisfaction of the Engineer.

The whole of the ballasting, the laying, slewing, or moving of all permanent way, and the maintenance of the rails, chairs and sleepers, and permanent way, during the time the works are in progress, will also be done by the Company at their own cost.

It is to be understood, that the materials of and within the cylinders, *i.e.*, cast-iron, wrought-iron, brickwork, concrete, &c., will be paid for according to the schedule, and that the amount asked by the Contractor for sinking and fixing the cylinders complete, pumping, &c., &c., will be in addition to the amounts due under the schedule. The providing and fixing the wrought-iron main girders for the railway, the cross girders, and the "top" of the bridge, form no part of the works comprised in this contract.

SCHEDULE OF PRICES.

All Materials provided and Work done by the Contractor.

	£	s.	d.
Earthwork measured in cutting for Southern approach, excavated and wheeled from foreshore of River Witham, under timber viaduct into embankment, at per cubic yard, including pumping and all contingent expenses			
Earthwork measured in cutting, got and filled at Bardney Station into waggons and cast out in embankment at north approach, including laying temporary rails, but exclusive of rails, sleepers,			

	£	s.	d.
fastenings, waggons, guard and engine power to be found by the Company, per cubic yard			
Brickwork in viaduct and cylinders, including excavation for same, and including planking, dams, strutting, centres, centring, pumping, contention with water, and every contingent expense of every kind, at per cubic yard			
Stonework in place in foundations, including excavation, planking, dams, strutting, pumping, contention with water, and every contingent expense of every kind, at per cubic foot			
Stonework fixed in place as bed stones, coping, &c., including bedding, setting, super on face work, tooling, throating, sinking, and other contingent work of every kind, at per cubic foot			
Concrete in Portland cement, sunk through water in boxes, per cubic yard			
Cast-iron in cylinders or elsewhere, per ton			
Wrought-iron in girders, 17 feet long, across cylinders, riveted and fixed in place complete, per ton			
Wrought-iron in bolts, nuts, &c., fixed in place per lb.			
Hoop-iron in brickwork, in place, fixed complete, per cwt.			
Memel timber, in piles, &c., in dolphins, per cubic foot			
Asphalte on arches, spandrils, &c., per super. yard			
Do. upright work, on spandril, walls, &c., per super. foot			
Sinking the 8 cylinders, fitting, fixing the same in the precise place shown by the plans, including dredging, scooping, pumping, loading with rails as test, and all and every expense connected with the sinking and fixing of the same in place, to the depth required by and to the satisfaction of the Engineer, by whatever means it may be necessary to sink or fix the same, and including the expense of getting in concrete, brickwork, &c., the iron, concrete and brickwork being however paid for in addition, at the schedule price. The 8 cylinders for the sum of			

Specification for VIADUCT *at* BAWTRY, *Great Northern Railway.* W. M. BRYDONE, *Engineer.* 1856.

THE viaduct is to be built of bricks, which shall all be of the very best material and make, which the district affords—sound, well burnt, and hard; and the Engineer is authorized to reject, and the Contractor shall not use any bricks, which in his (the Engineer's) opinion are inferior to the bricks made in the neighbourhood of Bawtry, and a sample of which may be seen at the office of the Engineer at King's Cross. The whole of the brickwork to be close-jointed, and of the best workmanship.

In *excavating for the piers and abutments,* the earth shall be close planked and strutted, the water pumped out, and the excavation taken to such depth as the Engineer may determine in each case.

The whole of the foundation of each pier or abutment shall be laid at one time; they shall be of the size and form shown on the enlarged drawings, and the brickwork shall be carried up evenly and at the same height at once, over the whole of each pier or abutment; and the work shall be grouted and larried at every second course, and the earth filled in, and well punned around each pier and abutment, and within the pockets of the latter up to the level of the present ground as the brickwork rises. All the surplus earth from the foundations and other excavations, shall be carried and placed, so as to widen the embankment at the two ends of the viaduct, as shown by the red lines. The present embankment to be benched, so as to receive such widening. The whole of this surplus earth from the excavations, for each pier or abutment, shall be put into the embankments, as soon as the pier or abutment, out of the excavation from which it came, has reached the land level.

The Contractor is to make, at his own cost, any such temporary diversions of the River Idle, as may be necessary, in order to pass the waters of the same and the boats upon it during the execution of the works. Any earth from such excavations to be carried to widen the embankments before named as soon as excavated. And the Contractor is to make and maintain, at his own cost, a proper diversion of the highway, during the construction of the works, to the satisfaction of the Engineer.

The *concrete* is to be composed of the best, strong, hydraulic lime, mixed with clean gravel (to be approved by the Engineer), in the proportion of 1 of lime to 6 of gravel. The *arches* are to be bonded work throughout (they are not to be built as "rings.")

The *lime used in the piers and abutments*, from their foundation to the level of the line painted on the existing piles, at about 15½ feet below rail level, is to be the best strong *hydraulic lime*. The *lime used above* the same level to be of good quality, the sand sharp and clean ; the mortar in the piers and abutments to be composed of 3 of sand to 2 of lime ; and in the arches of 1 of sand to 1 of lime ; the whole of the mortar used for the entire building to be perfectly ground between stones in a pug mill, to be driven by steam power, the whole mortar to be of such quality as the Engineer shall approve.

The *centring* shall be constructed, so as to interfere as little as possible with the present timber structure, and shall not be connected with the present viaduct nor touch any part of it. The centre of the new viaduct is to be 17 feet 6 inches from the centre of the present one, for the greater part of its length.

Neither line of way upon the present viaduct shall be interfered with, until, in the opinion of the Engineer, it has become necessary to remove the piles, which, as shown on the drawing, interfere with the roadway abutment, and with the navigable opening abutment, on the River Idle ; the whole of the piers at this time shall be at springing level ; the Contractor shall then be at liberty to cut through and remove the planking, and remove the present up road and the beams which support it, and such part of the cap, cill, and piles of the present viaduct, as, in the opinion of the Engineer, may be necessary in order to fix the centres. The Contractor shall then also take down those cross braces of the present piles, which are in his way, securely bolt up the other cross braces left, and shall then fix the cross braces removed in the contrary direction, and the Contractor shall not cross cut any of the braces. The Contractor will then commence turning the arches, which shall each be turned in one length of 28 feet at once. From this date of interfering with the present up line, the Contractor will be required, and in accepting this contract binds himself to complete the whole work in 12 weeks ; a fine of 10*l*. per day is to be paid by the Contractor to the Company, for each day after such time that the work continues unready to receive the ballasting and permanent way, which ballast and permanent way are to be found and laid in place ready for traffic by the Great Northern Railway Company.

The 4 *cast-iron girders*, now at the road crossing, shall be moved and fixed by the Contractor across the Idle navigation opening of the new viaduct. The 4 girders and wrought-iron ties, wanted for the bridge over the road, to be found and fixed by the Contractor. For both of these openings, *cast-iron floor plates* are to be provided and fixed by the Contractor according to the drawings. The whole of these girders and plates are to be fixed and painted 3 times; those at present there to be first cleaned and scraped free of rust. The whole of the girders and plates to be of the best quality of castings, and subject to such test as the Engineer may direct, at the cost of the Contractor. The cast-iron water pipes and caps to be provided and very carefully fixed by the Contractor, each of the same to be immersed when hot at the foundry in a preparation of pitch, so as to make a perfect coating within and without.

The copings to be of tooled and throated Yorkshire stone, no lengths to be less than 2 feet 6 inches, and the average length to be 3 feet 3 inches. The whole of the *arches*, the whole of the inner spandril walls and spandrils, *to be asphalted* by the Contractor in the most perfect manner, not less than 1 inch thick. The asphalte to be prepared and put on by Mr. Wright, of 32, Bucklersbury. It is to be a preparation of Trinidad asphalte and pitch, to be boiled, put on hot, and spread in successive layers of ¼ inch thick until it reaches 1 inch in thickness—this material and work is to be done to the entire satisfaction of the Engineer.

The Contractor is to form completely, as far as the surplus excavation will admit, the embankments widened by him, benching the present bank for the purpose at the 2 ends of the viaduct, and for the distances between A and B. The Contractor is to provide and fix any *temporary strutting*, which the Engineer may deem necessary for the support of the present down road at or near the roadway abutments, and at and near the Idle river abutment, when the removal of some of the piles near thereto interferes with the timber structure. The Contractor may use for such strutting any of the beams, which may have been taken by him from the present up road.

The whole of the timber and all other material of the present viaduct to remain the property of the Great Northern Railway Company, and its removal to form no part of the works included in this specification, excepting only such parts, already herein referred to, as are in the way of the new works—viz., the cutting through and removal of the planking and of the beams and timber under the present up road hereinbefore named, as also the removal of such piles and other timbers, as will be interfered with in order to build the road and river abutments.

The Contractor must so arrange for the passage of boats to and from the wharf, during the execution of the work, that no claims may be made against the Company, on account of obstruction of the roadway, waterway, or passages for boats; and the Contractor must re-imburse the Company any payments they may be compelled to make in case of any such obstruction. The Contractor is to divert 2 ditches shown on plan, and is to excavate 6 feet deep, and to remove into the railway embankment the piece of ground shown on plan, so as to make an equivalent water-way for the area lost by building the abutment in the same. Until the completion of the whole of the piers to springing level, the Contractor is so well and perfectly to strut his excavations, that none of the existing piles shall in any case be interfered with, so as to injure the stability of the piles which carry the 2 lines of way. After the up road has ceased to be used, precautions must be taken by the Contractor not to interfere with the stability of the remaining, or down road.

Especial care shall be taken by the Contractor to cover up and protect the whole of the work from frosts. In case the joints of any of the brickwork should be affected by frost, the same shall be raked and re-pointed by the Contractor at his own cost at the proper season. The Contractor is to be responsible for the perfect soundness of the new structure, and is, at his own cost, to make good any failure of the new viaduct or other part of the works proceeding from any cause whatever, until 3 months have elapsed after the passing of traffic over the viaduct; and the Contractor is to deliver up the whole of the works executed by him in 3 months after the traffic has been turned over the viaduct, in a perfectly sound state and to the satisfaction of the Engineer.

The whole of the ballasting, the laying, slewing, or moving of all permanent way between A and B, and the maintenance of the rails, chairs, and sleepers, or permanent way, during the 3 months before named, will be done by the Company at their own cost.

Specification for GRANARY *and* OTHER WORK *at* LEEDS, *Great Northern Railway.* W. M. BRYDONE, *Engineer.* 1857.

GENERAL CONDITIONS.

THE information contained in the following specification comprises the necessary particulars to admit of a tender for, and for carrying into execution, the whole of the works, and the finding of all materials necessary for the erection and entire completion of a granary, engine-house, engine chimney, boiler beds, &c., in the low level yard at the Leeds central station; together with the providing of all materials and labor necessary for the building or projecting of 3 hoists, with roofs over the same, from the goods shed of the Great Northern Railway Company in the same station, and other works hereinafter referred to.

All material and workmanship are to be of the best kind.

Locks, Fastenings, &c.—In case there be any fastenings, locks, bolts, or other ironwork, or other work of any kind necessary for the due completion of the new granary and other building, implied by either of the Drawings, Numbers 1, 2, 3, 4, 5, 6, 7, or by this specification, although the same may not be minutely referred to either in the drawings or in this specification, such work shall nevertheless be provided and fixed by the Contractor, without any charge beyond the amount of his lump sum contract.

Bricks.—The whole of the bricks used in the entire work shall be of the best material and make that the district affords; they shall be sound, well burnt, and hard. The whole of the work shall be faced with bricks of the same color as, and of quality and kind not inferior to, those used in facing the goods shed belonging to the Great Northern Railway Company, and adjoining which the works herein referred to are to be built. The interior bricks shall be of precisely the same thickness as the exterior bricks, and equally sound, well burnt, and hard.

Arches.—The whole of the arches over doors, windows, or elsewhere, shall be bonded work throughout; no arches shall be built in "rings;" the arches shall all be turned for their entire thickness, with arch bricks made to suit the radii. *Brickwork.*—The whole building shall be carried up evenly, and at the same height at once, and the whole work shall be grouted and larried at every third course, as the work rises, and the brickwork shall be close jointed, the joints neatly struck and of the best workmanship.

Hoop iron bond, 1¼ inch wide, shall be put throughout all the walls of the granary, sleeper walls, engine-house, engine beds, as shown in the drawings.

The *mortar* used in the whole buildings shall be composed of the best fresh-burned lime, from Barrow, in Leicestershire; of sharp clean sand, brought from Bawtry (or some of equally good quality, which shall be approved by the Engineer), and of the best cinder ashes, to be approved by the Engineer. The proportion to be ⅖ths lime, ⅖ths sand, and ⅕th cinder. The whole of the *mortar* used for the entire work to be perfectly mixed and ground under heavy rollers, in a revolving mortar-pan, which shall be driven by steam-power.

All the interior walls, the roof, and the joists, and under side of floors, to be twice *lime-whited*, when directed.

The *excavations for the foundations* shall, where close to the existing building, if desired by the Engineer, be close planked and strutted; the ground is to be filled in and punned around all the walls, and the surplus earth carted and spread at any point in the low level yard, that may be directed. *Foundation Stones.*—The "flag"-stone used at the foundation of the buildings, and under the piers of the columns, is to be sound stone, 12 inches thick, of the dimensions shown on the drawings, truly prepared with level beds and surfaces; the sides of the stones truly tooled where they touch each other; carefully bedded on a flat surface, so that the tops of the stones may be truly horizontal, and at a uniform level, before the brickwork is commenced.

All the rest of the stone used in the buildings, for whatever purpose, is to be of the best *Bramley stone*, well and truly prepared, with horizontal beds, and all the surfaces exposed to view tooled in the best manner. All sills to be well throated and weathered. The stones, on which the ends of the girders will rest, shown on the drawings as 5 bricks thick, shall be of the precise thickness of 5 courses of brickwork. These stones to be tooled, so as truly to receive the girders shown to rest on them.

The *cast-iron* columns, girders, and other ironwork, shall be of the best description as castings; free from air-holes or other defects; they shall be true and clean castings; shall be subjected to such test as the Engineer may direct, at the expense of the Contractor. The whole cast-iron work shall receive 1 *coat of red lead* immediately each casting is cool, and before any wet has fallen upon it; and 2 *more coats* of grey oil color when in place, and before the joists are fixed.

Galvanize Cast Iron.—The whole of the window sashes, the cantilevers, the wheels over the doors, and all the small cast-iron work throughout the buildings, are to be galvanized, and afterwards painted with 3 coats of oil color.

Each column shall have its top and bottom bearing surfaces horizontally and truly *turned in a lathe*, as also the surfaces or sides in contact, where one column fits into another. The girders and other *ironwork* shall be *truly fitted*, and bedded in a workmanlike manner, and to the satisfaction of the Engineer.

The *wrought-iron work* shall all be of the best material, description, and make, well and truly fitted, as shown in the drawings. The whole of the straps and other ironwork in the roofs, the whole of the straps and other ironwork in the doors, and all other wrought-iron work throughout the building, *is to be galvanized.* The *down pipes* to be of galvanized cast iron. The eaves, gutters, and clips to be of galvanized wrought iron, fixed in the best manner with regular falls.

Timber Memel.—Battens.—The whole of the timber used in the joists, floors, or in other parts of the work, to be of the best Memel or Baltic red wood, free from sap, shakes, large knots, or other defects, prepared and framed in the best manner, according to the different work shown in the drawings. The whole of the exterior woodwork, and the whole of the doors, to be wrought, framed, and painted with 4 coats of bronze oil color. The *floors* to be all of the best red wood 7-inch battens, *ploughed and tongued with hoop-iron* at $\frac{3}{4}$-inch from underside of floors. The sack slides and telescope grain shoots to be wrought, framed and fixed in the best manner.

Weigh Machine.—The Contractor shall, without charge, beyond the amount of his lump sum tender, take away the weigh machine, foundations, and office, now at the end of the goods shed, and rebuild and refix the same at the end of the new granary.

Slating.—The slating to be with the best countess slates, fixed with copper nails; the lap of the slates to be 3 inches.

The *lead* gutters to be of 6-lb. lead, well laid in a workmanlike manner, with proper falls, cess-pits, &c., so as to conduct the water down the columns.

Glass.—The whole of the windows to be glazed with rough plate

Additions or Deductions.—If, in the opinion of the Engineer, it should be necessary to carry any of the foundations to a greater depth than is shown on the drawings, or if, in the opinion of the Engineer, it should be desirable to place any of the foundations at a less depth than is shown on the drawings, or if, in the opinion of the Engineer, it should be desirable to add to, or deduct from, the quantity of brickwork, stonework, cast-iron, wrought-iron, timber, or any other work, then such additions or deductions shall be estimated by the Engineer at the prices named in the schedule attached hereto, and the amount shall be added to or deducted from the amount of the Contractor's tender (as the case may be), when a final payment is about to be made to the Contractor.

Paving.—The spaces around the granary, engine-house, &c., shown on the plans, are to be paved with Leeds stone paving, of the same description and size as used at the present roadway for carts to and from the present goods shed, using for the purpose any pitching that may have to be removed, as far as it will go. The space within the granary, where the rails will be for a width of 12 feet 6 inches along the entire side of the new granary, and along one end of the same, for a width of 16 feet 6 inches, to be paved with smaller Leeds paving, 3 to 4 inches wide, 7 to 9 inches long, and 5 to 6 inches deep.

Gas.—The whole of the gas-pipes, pendants, and fittings, as undermentioned, are to be of galvanized iron, and are to be provided of the best material and workmanship, and fixed by the Contractor. A length of 643 feet of 3-inch cast-iron gas-pipe, with lead joints, to be connected by him (the Contractor), with the gas main in Wellington Street, and laid under ground along the side of the goods shed, and up to the point M, shown on Drawings Nos. 1, 2, 3. At this spot a 50-*light meter* is to be provided and fixed, and a proper stop-cock, with the usual means of diminishing the supply; a 2-inch cast-iron rising-pipe, with lead joints, to underside of first floor, 7 feet long; a 2-inch cast-iron rising-pipe, with lead joints, from underside of first floor to the tie-beam, 30 feet long. At the level of underside of first floor, of second floor, of third floor, and of tie-beam, 1-inch and 1½-inch wrought-iron gas-pipe, with screw joints, to be connected with cast-iron rising-pipes before named, and to extend the whole length of the new granary, being a total length of 440 feet, of 1½-inch wrought-iron pipe for the 4 floors; at the junction of each of the 4 lengths of 1½-inch pipe with the rising pipe, the usual simple means for diminishing the supply, by means of smaller pipes and stop-cocks, to be twice made, as sketched on Plan No. 7. From the 4 lengths of 1½-inch pipe above named, branch pipes of wrought iron 1 inch diameter, to be carried along the underside of the joists and tie-beams, to the No. 42 pendants shown on the plans, requiring a total length of 976 feet of 1-inch piping for the 4 floors. Usual metal pipe to connect to each pendant. 42 galvanized pendants of ¾-inch wrought-iron pipe, of strong make, hanging 3 feet 9 inches, with proper bat'swing burners, and usual stop-cocks, with best brass joints on 4-inch diameter plates, to be strongly screwed with 3 screws in each to underside of floor, in such precise positions that, when out of use, the pendants may be pushed up, and buttoned to floor between joists.

Boiler-house, Engine-house.—A length of 128 feet of 1-inch wrought-iron piping, as before specified, and with means of diminishing supply of gas, to be provided and fixed from the rising cast-iron pipe at M, past the granary door, round the building above-named, and into the same; a stop-cock, and means of reducing the supply, to be placed in the engine-house. 2 wrought-iron wall brackets of strong make to be provided and fixed in the engine-house and in boiler-house, and 2 outside roadway lamps, as shown, on angles of buildings.

Engine, Boiler, Gear.—The engine, boiler, hoisting-gear, and wheels, shafting, chains, drums, &c., shown on the drawing, form no part of the works to be tendered for by the Contractor; the Company, however, reserve the right to send whoever they may please, to fix all such gear as they may at any time desire, during the execution of the works; and the Contractor shall have no claim, on account of any inconvenience (if any) that such work or workmen may occasion him.

Specification for Additional LOCOMOTIVE WORKS *at* NEW ENGLAND, *near Peterborough, Great Northern Railway.*

W. M. BRYDONE, *Engineer.* 1857.

WORKS IN GENERAL.

The information contained in the following specification comprises the necessary particulars for carrying into execution the whole of the works and the finding of all labor and materials necessary for the building and entire completion of an engine erecting shop, engine pits, and traverser pits, turning shop, boiler bed, stores, and other offices, and other works either shown on the Drawings, Nos. 1, 2, 3, 4, or hereinafter referred to.

The *excavations* for the foundations to be carried to such depth as the Engineer may deem advisable, the trenches to be kept free from water, and the earth well rammed in on both sides as the brickwork rises, all surplus earth to be removed and spread where directed by the Engineer, to within 100 yards of the place of excavation.

The whole of the *drain pipes* to be of the best Wortley make, glazed and socketed, laid to a true fall; and of such size and in such position, with suitable bends, junctions, &c., as shown on the drawings; the cesspools to be well-formed and rendered in cement, and the connexion with pipes made perfect; the piers under columns of erecting shop to have 6-inch pipes built in the centre, with proper bends, as the work proceeds; the large cesspool to be built in cement, 9 feet deep inside, with domed top and man-hole, having 9-inch York cover complete; and a length of about 140 yards of 12-inch glazed and socketed pipe is to be provided, leading past the cesspool into the open drain, as shown on the drawing, and laid to such depth as may be necessary with proper falls; filling in, making good, and punning around and over the same, and to all other drains within and around the buildings, as shown on the plans.

Concrete.—Where wood paving is shown on the drawings, the whole surface must be excavated to the proper depth to receive a bed of concrete 12 inches thick, composed of 1 part of lime to 6 parts of gravel or other approved material.

The *bricks* used in the entire work shall be of the best make that the district affords, sound, well burnt, and hard, and fully equal to those used in the engine-sheds and smithy adjacent. The *walls* are to be built in alternate courses of headers and stretchers throughout; the courses to be truly and evenly laid, having a close and neat struck joint on both sides, and grouted and larried at every course as the work rises. The *arches* for windows or other openings to be formed on centres adapted to the works, and of bricks made to suit the radii; and the centres to remain until the proper setting of the work. Splayed bricks, moulded to form the plinth, must be provided to suit the proper bevel. *Hoop-iron bond* is to be inserted in the walls at every half brick in thickness, for 3 courses in height around the whole building, the bottom course being 18 inches below plinth; also to be inserted at every half brick for 2 courses in height around the whole building, at the level of 24 inches above the window openings, or other position the Engineer may think fit.

The *mortar* used throughout the work to be composed of the best fresh-burned local or other lime of approved quality, and clean sharp river sand, and best cinder ashes, in the proportions of 2 of lime, 3 of sand, and 1 of cinders. The mortar to be well mixed in a pugmill, in small quantities, as required.

Form *cesspools* in traveller and engine pits where shown, and render the same in cement. All the cesspools are to be covered with strong cast-iron water-grates, fixed in English oak frames. Form cesspools 9 inches square under foot of all rain-water pipes. Insert No. 10 air-bricks under floors of offices. The bottom of all cesspits to be 1 foot below the inverts of pipes.

Provide a *boiler bed*, in the position shown on the drawing, with brickwork connexion with present chimney shaft, including the necessary firebricks, furnace, doors, ash grate, and fittings complete, excepting the boiler, which will be found by the Company but fixed by the Contractor.

The engine pit and traveller pit to be *paved with hard bricks on edge* in cement, close jointed, and laid on concrete 6 inches thick, with a proper fall toward the gratings.

The *urinals* are to be laid with 3-inch tooled York flags. The drain pipes from the same leading under offices, to be well cemented together at the joints, to be bedded in, rammed round and covered with puddled clay. Fix 3-inch rubbed York flag across urinal 24 inches high rounded at the top edge, and three 1½-inch slate divisions where shown. Fix cast-iron urinal pans where shown, and 2-inch framed screen, filled in with ¾-inch boarding grooved, and tongued together, and beaded on both sides.

The *stone* used as bedstones for columns and girders, quoin stones to engine pits, crook stone for doors, &c., to be of the best Bramley Fall stone; and for window sills, coping steps to engine pits, &c., to be of the best description of York stone. In all cases to be well bedded in mortar, and laid in horizontal beds, and such precise thickness as may suit the courses of bricks, and having all exposed faces tooled in the best manner. The whole of the stone to be completely free from shakes, clay holes, and all other defects; the whole of them neatly tooled, and weathered and throated where required.

The *Bramley Fall bedstones* under columns to be 15 inches thick and 3 feet square, having a hole through the centre 6 inches diameter, and sunk 1½ inch deep, to receive the base of columns. *Quoin stones* 2 feet × 14 inches, and of the true thickness of 3 courses of bricks, to be set at corners of engine pits, &c., as shown. *Window sills* to be weathered and splayed, to be in line and uniform, with splay brick plinth. *Door sills* to be 9 inches thick by the breadth of the respective walls, and 9 inches longer than the openings at each end. *Stone templates* under trusses in turning shop to be of Bramley Fall stone, having moulded face, and to pass through wall of erecting shop. Stones to support hanging bar of large doors to be firmly bedded, also build in proper hook stones for door into erecting shop; the crooks to be properly let in and run with lead.

The *cast-iron* used throughout the building, in columns, girders, sashes, struts, shoes, gratings, &c., shall be of the best soft grey iron, and free from all air holes or defects; they shall be cast in strict accordance with the drawings, and subjected to such tests as the Engineer may direct, at the expense of the Contractor. The whole of the cast-iron work shall receive one coat of red lead immediately each casting is cool, and before any wet has fallen upon it. *Iron Sashes.*—The *window sashes* are to be cast-iron, to be 2 inches thick with $\frac{5}{8}$-inch bars, rebated to receive the glass, and moulded on the inside; to have proper studs to secure them in their places, and are to be built in as the work proceeds. *Wrought-iron.*—The *wrought-iron* in trussed girders and roof trusses to be of the best description of scrap iron, free from scales or other defects; the plates, bars, and angle iron are to be cut to the precise length and accurately punched, the holes to be of the proper size for bolts or rivets, and the riveting to be done hot, and no joints to the plates or angle iron will be allowed but those shown on the drawings. The whole of the ironwork in roofs and elsewhere shall be prepared, fitted, and fixed in a true and workmanlike manner.

The Contractor is to provide all necessary *patterns* and moulds for cast-iron work, allowing for additional substance, as may be necessary to produce castings of the precise dimensions shown by the drawings.

Provide galvanized cast-iron moulded *spouts to the eaves* throughout, to have proper outlets over the down pipes, and completely water-tight; with red lead at the joints; to have 4-inch *cast-iron down pipes* where shown, with moulded cistern heads, and shoots to deliver into the cesspits; the whole to be securely fixed.

All the *timber* used in the buildings as joists, floors, trusses, roof boarding, &c., to be of the best Memel or Baltic red wood, free from sap, shakes, large knots, or other defects, prepared and framed in the best manner, according to the kind of work intended.

The *wood paving* to be 4 inches thick, in close jointed blocks, laid on end grain, on a bed of concrete, as before specified.

The roof over the turning shop is to have 5 pairs of wood principals framed according to drawing, with straps and bolts as shown. The small office and urinal to have spars 3 inches × 2½ inches, spaced 15 inches from centre to centre, with plates and bearers 4½ valleys are to be 18 inches wide. The whole is to be well batted down, laid straight and solid, and be neatly trimmed over the tilting and dressing laths.

Glazier.—The partitions, windows, and doors, in both offices to be glazed with best seconds crown glass, 16 ounces to a foot; all other glass in windows and skylights to be rough plate ¼-inch thick.

Painter.—Properly stop, knot, and prepare all the works requiring paint, and paint the whole of the wood and iron usually painted 4 times in good oil color, and finish of an approved tint.

Specification of Works required to be done in Building a GARDENER'S COTTAGE, *at* DALBY HALL, *for* E. B. HARTOPP, Esq., *Dalby Hall, Leicestershire.* THOMAS L. DONALDSON, *Architect.* 1849.

BRICKLAYER AND DIGGER.

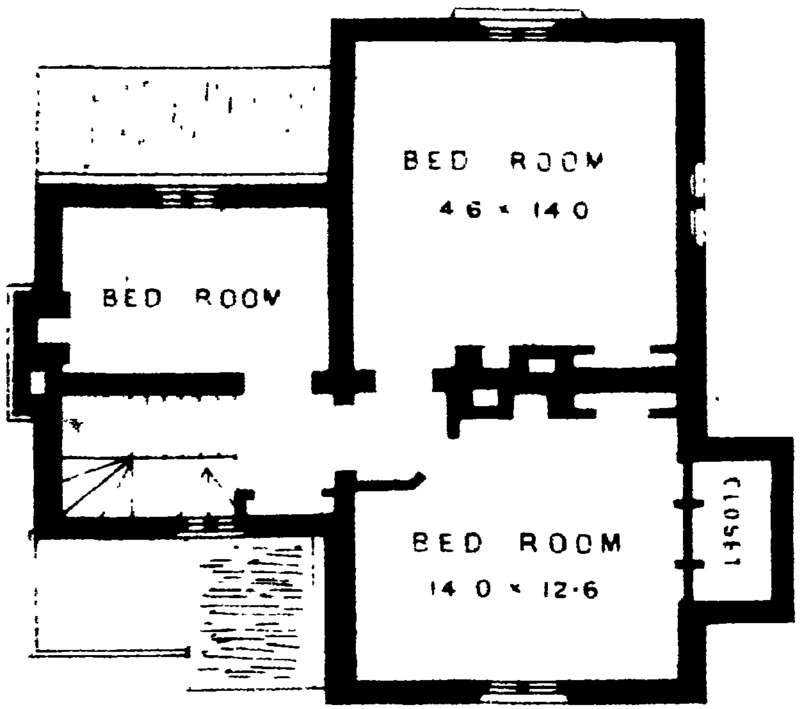
Dig out the ground for the foundations of the various walls, chimney breasts, &c., to the widths and depths required. Dig out the trenches for the drains, cesspool, and well, as also the surface of the ground under the sitting-room to the depth of 12 inches below the present level.

The whole of the superfluous earth to be removed 30 yards from the site of the cottage, and spread as directed.

Build the walls, chimney-breasts, &c., of the lengths, heights, and thicknesses, shown by the drawings with the best square stock bricks thoroughly burnt, and mortar composed of one part of fresh quick Barrow stone lime and 3 of sharp grit sand free from all impurities.

All the work to be carried up regularly all round, and the vertical joints well flushed up; the front to be flat joint in blue mortar jointed, and the 9-inch end walls fair both sides. The lowermost courses of the walls and chimney-breasts are to be 18 inches below the general surface of the ground, and carried through the openings throughout.

Turn arches over all the lower doors and windows. Form the door and window openings and blanks as shown, and splayed on the outer angles, and bed and joint all the frames and other timbers.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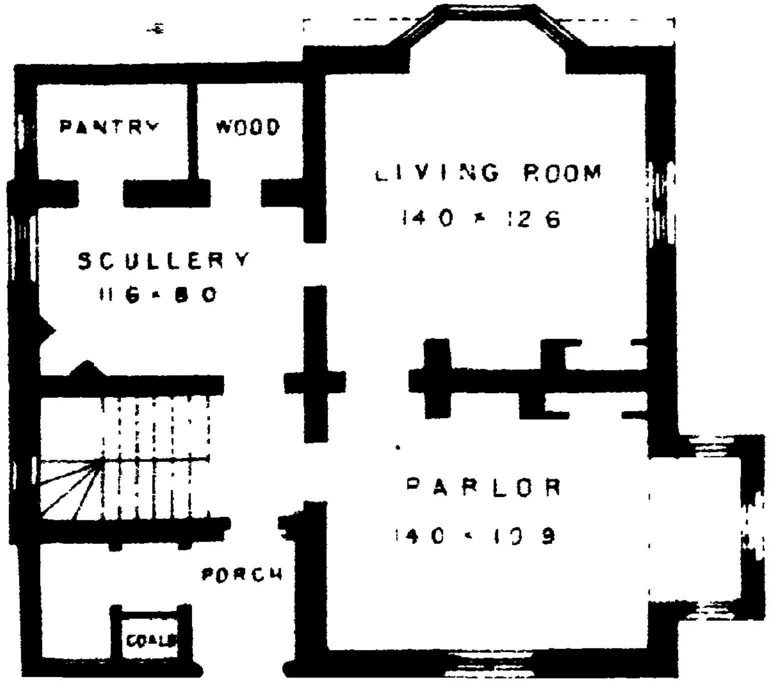
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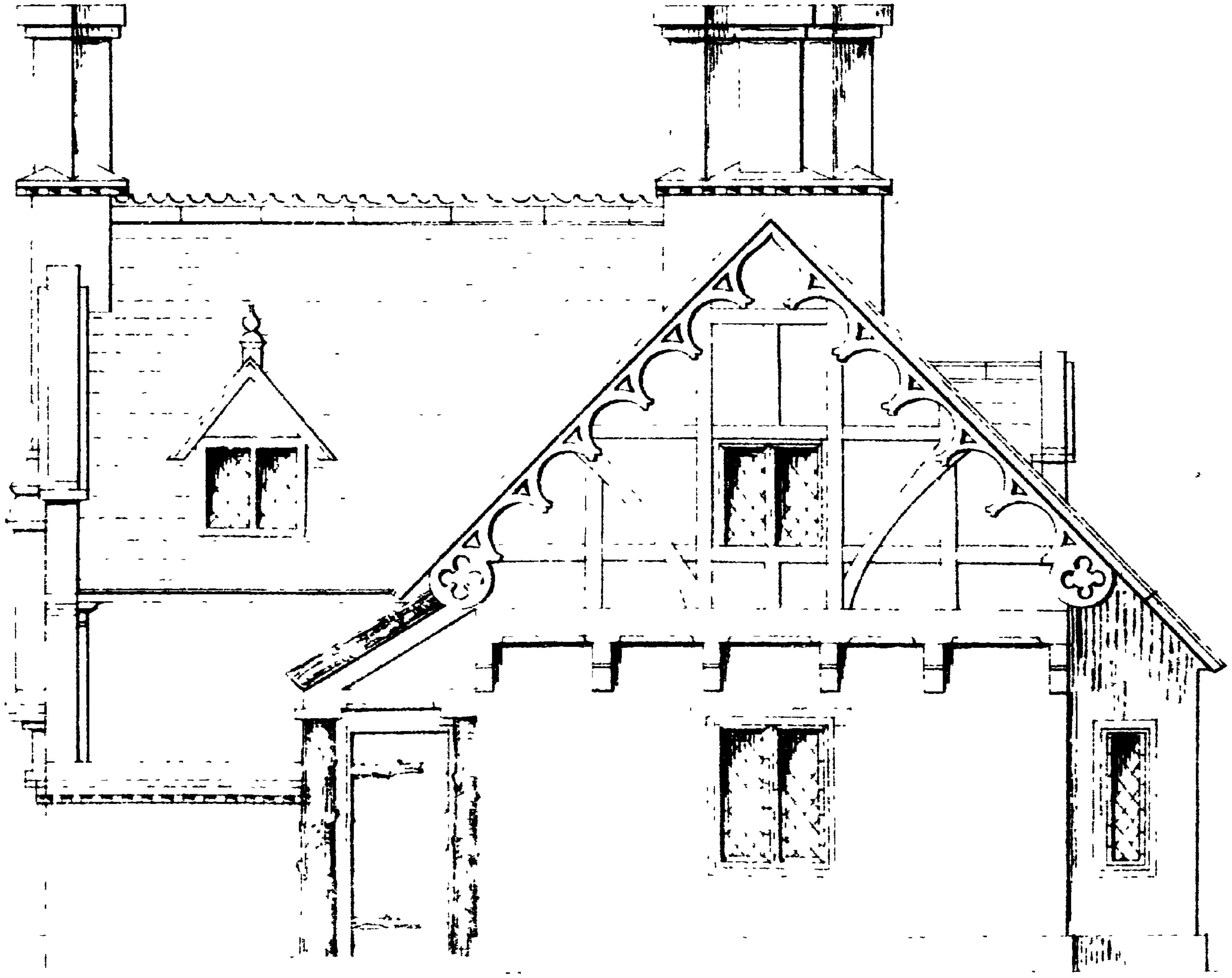

Form the figures with black headers where shown on the elevations.

Parget the Flues.—Turn trimmers to the upper fire-places, build fender walls to the lower fire-places and piers to carry the wood sleepers. The sleepers next the wall to be carried on a projecting half brick 9 inches asunder. The chimney-shafts to be worked carefully with the sailing courses, blocks, &c., as shown on the elevation and section, the 4 upper courses to be in cement.

Lay 5 tiers where shown on plan in cement with iron hoop bond, as follows—each tier is to consist of 2 courses laid in cement with 4 lengths of hoop iron $1\frac{1}{2}$ inch × $\frac{1}{16}$ inch; 2 in each joint, and to run all round the walls and through the chimneys both of house and washhouse building.

The cement to be of the best quality, fresh and mixed with equal quantities of sand.

The enclosures of the lower buildings to be of bricknogging.

Paving.—Pave the scullery and pantry, which is to be sunk 1 foot 6 inches below level of kitchen, as also the woodhouse and coal-house and closet under stairs, and porch with brick flat in sand, grouted, and laid in herring-bone fashion. The living-room is to be paved with brick quarries.

Provide half a rod of brickwork in mortar, to be deducted if not required.

SLATER.

Cover the roofs with the best *Colly Weston slates* laid to a regular gauge with 3-inch laps, copper nailed, and pointed beneath. The ridge tiles to be of glazed stoneware crested, and point the fillets with cement throughout.

Provide and fix on slate bearers 50 feet super of $\frac{1}{2}$-inch slate sawn shelving of various widths, where and as shall be directed.

Cesspool.—Sink a cesspool under privy 5 feet below the level of the ground, and form the walls in 9-inch brickwork with proper footings.

Well.—Sink a well or cistern 3 feet in diameter to the depth below the surface of the ground sufficient to contain 1500 gallons, steined in sound hard bricks, and cover with two 3-inch York slabs or inch slate slabs, the said slabs to be 12 inches below the level of the ground.

Copper.—Provide and fix in the scullery a stout copper 20 inches in diameter at top with lid, and complete in every respect, with all requisite door frame and other ironwork complete for the furnace, and proper dust-hole under do.

Provide and fix 8 gratings 9 inches × 3 inches, to admit air under lower floors. Chimney-bars to fire-places 2 inches × ½ inch. Provide 70 feet run of 6-inch tubular drain-pipes, discharging into the sewer in the road.

CARPENTER AND JOINER.

The roofs are to be constructed as shown by the drawings with timbers of the following scantlings:—Ridge, 9 inches × 1½ inch; rafters 4½ inches × 2 inches; collars, as ceiling joists, 1 to each pair of rafters, 4½ inches × 2 inches; purlins, 8 inches × 4 inches; plate, 4 inches × 3 inches; valleys, 9 inches × 2 inches; struts or suspending pieces, 4 inches × 2 inches. 2 girders, 10 inches × 8 inches, to bedroom floor; joists, 7 inches × 2½ inches, properly trimmed to the fire-places, and strutted in each room with 2 tiers of struts, laid herring-bone fashion, plate, 4 inches × 3 inches. Fir joists and sleepers to the floors of parlor and staircase below, 4 inches × 2½ inches. Lintels to all the openings, 5 inches thick and 12 inches wide. Wood bricks and plugs where necessary for fixing Joiner's work. All the partitions and closet enclosures both above and below are to be 1½ inch deal square, framed both sides with ½-inch panels, with doors hung complete thereto, with all proper hinges, locks, &c., according to their several positions. The butts to be 3 inches, the locks to room doors to be 6 inches iron rim, and to the closet doors 5-inch dead closet locks.

The closets under the stairs to be divided with inch deal board, and brace partitioning. The other cupboards to have 1¼ framed square fronts with inch ledged doors hung thereto, with 12-inch cross garnets with proper locks.

Provide and fix 50 feet super of inch deal shelves and bearers in widths of 12, 9, and 6 inches as shall be directed, all to be left loose on fillets, except 15, which are to have brackets.

The windows to have deal solid, rebated, moulded frames 4 inches × 3 inches. double rebated and double moulded mullions, with oak sunk and weathered sills.

The windows to be filled in with frames and with zinc lights, of the pattern shown on the lower floor. One wrought-iron casement to each window, having hinges and fastenings complete, beaded and stopped round the windows inside.

The windows to the ground-floor to have inch clamped shutters and hanging stile, with rule joints hung at the bottom with table hinges, so as to form a table or flap when down, and to have an iron leg with staples, &c., and a wood button. The blanks to be filled in with slight frames wrought one side to match, and glazed with zinc lights.

The doorways to larder, of closet, next dresser, and that leading to wash-house, to have 1¼-inch rebated and rounded jambs, and ledged doors as above described, with cross-garnet hinges and Norfolk latches.

The front door to be 1½, framed and braced, filled in with inch ploughed, tongued, and beaded battens, laid diagonally, hung with 3½ batts, and iron plate to represent old hinges outside, having drawback lock and 2-barrelled bolts. Fir proper doorcases 4 inches × 4 inches, with oak sills and beaded stops round inside, and to privy; the doorways to pantry, woodhouse, shed, and privy, to have ledged doors with Norfolk latches and barrelled bolts. Inch sliding boards 3 feet high to coal-place, with fillets to form groove for same.

The staircase to have inch deal steps, rounded nosings and inch risers, housed both ends into 1¼-inch string. Deal mop stick handrail, inch deal skirting square, 4 inches high round all the rooms, and in closets next brickwork. Inch deal folding-floors where boarded. Inch deal seat riser and stout bearers to privy, with hole cut and cover fitted, ¾-inch square skirting 4 inches high.

Put in living-room a dresser 6 feet long, with 1½-inch clean deal top, 2 feet wide. 3 drawers, with inch deal fronts, and ¾-inch deal dovetailed rims and bottoms, strong legs and bearers, ¾-inch deal pot-board on proper bearers, ¾-inch deal cut standards, and 3 sunk ¾-inch deal shelves, 8, 6, and 4 inches wide.

The porch outside the front door to be formed with trunks of trees, and roof covered with slates, as shown on the drawings.

The overhanging fronts to be formed of fir studs, 5 inches × 4 inches, filled in with 9-inch brickwork, wrought and chamfered plates under ditto, 12 inches × 9 inches; 4 stout joists, 6 inches wide, to each front, and stout templates and corbels, as shown, securely pinned into the walls. Fir lintels, 9 inches × 6 inches, over all windows, wrought and chamfered; 1½-inch wrought and cut bargeboards to eaves of overhanging parts.

Provide and fix to the two fire-places below inch deal wrought shelves 7 inches wide.

Provide 50 feet extra of cube fir, wrought and framed, to be allowed for if not required.

PLASTERER.

Lath, lay, set and white all the ceilings. Render and set the walls of rooms. Color the sides. The scullery sheds and privy not to be plastered, but to have the walls limewhited.

Lath and plaster the floors of the upper story in the most substantial manner.

MASON.

Provide and fix to all the fire-places York stone slabs, 2 inches thick, well bedded in mortar, as also fire-stone inner hearths, and Portland mantels and jambs. Provide and fix in scullery on brick piers a York stone sink, 3 feet 6 inches wide, with rounded corners complete, with bell trap and grate at top, and 5-hole stone sink and trap at bottom discharging into drain.

The panel with the coat of arms to consist of a block of Bath stone 2 feet 3 inches × 1 foot 9 inches, and 4 inches thick, carved with the shield and coat of Mr. Hartopp's arms.

York solid step, 12 inches × 3 inches, to external door, morticed for door-cases, and 3-inch York treads to the 3 steps in pantry, and to doorway of wood shed.

PAINTER.

Stop, knot, prime, and paint 3 coats all the inside and outside woodwork usually painted. The entrance door to be grained inside and out, plain oak in oils, and varnished 2 coats.

PLUMBER.

Provide and fix 50 feet of 4-inch half round zinc guttering on stout iron brackets under the dripping eaves of house, with 3 lengths of 2½-inch piping, with proper heads and shoes; the heads to have waste shoots.

Provide and fix in scullery a best cast-iron pump, complete with proper suckers, &c., connected with the well by a 2-inch supply pipe.

Put 5-lb. flashings against the shafts and parapets of gable end and dormers.

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THE END OF DIVISION II.

LONDON
SAVILL AND EDWARDS, PRINTERS, CHANDOS STREET,
COVENT GARDEN.

THE LAW

IN RELATION TO THE

LEGAL LIABILITIES OF ENGINEERS, ARCHITECTS, CONTRACTORS, AND BUILDERS,

INCLUDING THE

LAW OF CONTRACTS, ARBITRATIONS, MASTERS AND WORKMEN,
AND
COMBINATIONS OR STRIKES.

BY

W. CUNNINGHAM GLEN,
OF THE MIDDLE TEMPLE, BARRISTER-AT-LAW.

LONDON:
ATCHLEY & CO., 106, GREAT RUSSELL STREET.
1860.

LONDON:
SAVILL AND EDWARDS, PRINTERS, CHANDOS-STREET,
COVENT GARDEN.

PREFACE.

THE object of this Work is to place before the professions to which it is addressed, the legal liabilities that members of those professions incur in their various relations as employed and employers; it is not, therefore, one which is exclusively intended for the legal practitioner in the actual practice of the law, but has more especial reference to persons engaged in engineering and architectural pursuits and operations. The Work indicates the rocks and shoals by which those, so engaged, are surrounded in the daily transaction of their matters of business; and it seeks to be a guide to them in the several legal liabilities arising in the practice of their profession. "*He that does the first wrong is answerable for all consequential damages,*" is a fundamental principle of law which cannot be too strongly impressed upon those for whose especial use this Work is designed.

The Work treats of

1. Contracts generally.
2. Contracts with corporations.
3. Extra works.
4. Party walls and injuries to buildings.
5. Arbitrations.
6. The relation of architects and surveyors to employers.
7. The liability of contractors for damage done to works.
8. The liability of masters for injuries to servants in the course of their employment, and other persons.
9. Differences between masters and workmen.
10. Combinations of masters and of workmen, strikes, &c.
11. The Truck System.

Under each of these divisions, the law, as contained in the Statute Book, and as expounded by the Courts, will be found fully set forth and explained.

2, *Dr. Johnson's Buildings,*
Inner Temple Lane, London,
11 *Nov.* 1859.

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ADDENDUM.

SINCE the sheets of this Work were printed off, judgments have been given by the Courts of Queen's Bench and Exchequer in a recent case relating to the law of combinations or strikes; and as it is one of considerable importance and has created much public interest, the facts of it are here stated, in order that they may be read in connexion with the chapter of this Work on Combinations of Masters and of Workmen, *post*, page 116. One William Perham had been convicted by one of the metropolitan police magistrates under the 6 Geo. 4. c. 129, § 3, of having, within six calendar months before the complaint, "unlawfully, by threats endeavoured to force one W. J., who was then and there a workman, hired in his trade and business of a mason by T. P. and W. P., to depart from his said hiring, contrary to the Statute;" and committed to the House of Correction at Coldbath-fields for the space of two calendar months. Upon appeal to the Middlesex Sessions, the conviction was affirmed; and, subsequently, the Court of Queen's Bench was moved to issue a writ of *habeas corpus* to bring up the body of W. Perham, with a view to quashing the conviction. It was urged by the defendant's counsel, 1st. That the conviction should have set out the threats, in order that the Court might judge whether they were of such a nature as to be within the Statute. And, 2ndly. That the conviction did not follow the words of the Statute, and did not state that the threats were made to W. J., or to any other person. But it was held that, inasmuch as the offence was stated in the words of the Statute declaring the offence, the conviction was good under the Metropolitan Police Act, 2 & 3 Vict. c. 71, § 48; and further that independently of that Act, the offence was sufficiently stated.

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[1] *In re* William Perham, 5 Jur. (N. S.) 1212; 1 L. T. (N. S.) 91.

The information upon which this conviction proceeded was in writing, and the informant stated as follows:—"I live, &c., and am in the employ of Messrs. P., &c. On Saturday night, the 1st October instant, I was in a beer-shop in the Goswell-road with W. J., and fifteen or sixteen other workmen, all engaged by Messrs. P. as workmen. W. Perham was there,—he came in; he said to the men, 'If you dare work we shall consider you as blacks, and when we go in we shall strike against you, and strike against you all over London;' he followed us all the way to my house." Upon an application to the Court of Exchequer for a writ of *habeas corpus*, that Court not only concurred with the Court of Queen's Bench in the grounds upon which it refused the writ, but affirmed the conviction, and held that the information sufficiently stated facts which constituted an offence under the Statute.[1] The offence, the Court said, is not the threat, but the forcing or endeavouring to force a workman to depart from his employment; and all questions as to whom the supposed threats were addressed, and whether they were of the description calculated to produce the effect mentioned in the Statute, are only matter of evidence; so that if the magistrate is satisfied of those facts by the evidence, he may draw up the conviction in the very language of the Act. The above case also shows that the information of an offence against the Act having been committed need not be in writing, and that if all the parties appear before the magistrate without any previous information, and he then hears the case, the conviction will be supported.

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[1] Reg. *v.* Perham, 5 Jur. (N. S.) 1221; 1 L. T. (N. S.) 106.

THE LAW IN RELATION TO THE
Legal Liabilities
OF
ENGINEERS, ARCHITECTS, BUILDERS, AND WORKMEN.

I.

CONTRACTS.

1. *Generally.*

A CONTRACT or agreement is composed of two parts, imposing reciprocal obligations upon each of the parties to it in order to compel each to perform his part of the agreement; and it imports two considerations, that is to say, the performance of the agreement on either side is the consideration for the performance of the agreement on the other side. These may be stated as the general nature and constituent elements of a contract.

Generally, with regard to contracts it is further necessary to state that the essence of a contract is that it be made without fraud; that is, that there be no circumstances concealed by either party to the contract which it was essential for the other to know at the time of entering into it. If a contract be tainted by fraud or by such a concealment of facts within the knowledge of one of the parties to the contract as would amount to fraud, the contract cannot be enforced. What amount of concealment will make a contract fraudulent, would be a question for the Court, if proceedings be taken to enforce it. Cases, however, have frequently occurred in which, upon entering into contracts, misrepresentations made by one party have not been in any degree relied on by the other party. If the party to whom the representations were made, himself resorted to the proper means of verification before he entered into the contract, it may appear that he relied on the result of his own investigation and inquiry, and not upon the representation made to him by the other party; or if the means of investigation and verification be at hand, and the attention of the party receiving the representations be drawn to them, the circumstances of the case may be such as to make it incumbent on a court of justice to impute to him a knowledge of the result, which, upon due inquiry, he ought to have obtained, and thus the notion of reliance on the representations made to him may be excluded. When the Court is endeavouring to ascertain what reliance was placed on representations, it must consider them with reference to the subject matter and the relative knowledge of the parties. If the subject is capable of being accurately known, and one party is, or is supposed to be, possessed of accurate knowledge, and the other is entirely ignorant, and a contract is entered into after representations made by the party who knows, or is supposed to know, without any means of verification having been resorted to by the other, it may be presumed that the ignorant man relied on the statements made by him who was supposed to be better informed: but if the subject is in its nature uncertain; if all that is known about it is matter of inference from something else; and if the parties making it and receiving representations on the subject have equal knowledge and means of acquiring knowledge, and equal skill, it is not to be presumed that the representations made by one would have much or any influence upon the other.[1] Moreover, a collateral statement made at the time of entering into a contract, but not embodied in it, in order to invalidate the contract, on the ground of its being a fraudulent statement, must be shown not only to have been false, but to have been known to be so by the party making it, and that the other party was thereby induced to enter into the contract.[2] Again, it has been held that a party who holds out a fact as true, and induces another party to act on the belief of the fact, is precluded from afterwards denying the fact which he held out as being true.[3]

If a contract be entered into under fraudulent representations, so soon as the fraud is discovered, the contract should be repudiated; as if it be not, and, notwithstanding the fraud, be executed, payment for the value of the work actually performed cannot be claimed. Thus, where a person was engaged to convey away certain rubbish at a specified sum under a fraudulent representation by the employer as to the quantity of the rubbish which was to be conveyed, it was held in an action for the value of the work actually done, that the contractor could recover only according to the terms of the special contract; although, when he discovered the fraud, he might have repudiated the contract and sued the employer for deceit.[4]

[1] Clapham *v.* Shillito, 7 Bea. 146.

[2] Moens *v.* Heyworth, 10 Mee. and W. 147.

[3] Pickard *v.* Sears, 6 A. and E. 469.

[4] Selway *v.* Fogg, 5 Mee. and W. 83.

With regard to entering into contracts generally, the following observation of Lord St. Leonards in a recent case in the House of Lords may be quoted; referring to the case of Tawney *v.* Crowthe,[1] and Lord Thurlow's judgment thereon, he said that it is an authority for this:—"That if terms be reduced to writing, and a man says that he will abide by those terms, and will sign the agreement, although he does not sign, he is bound by that agreement; that is what the case amounts to as an authority; and it is a very important case. There are besides," he said, "several cases in which a single note written by one party to a solicitor to draw an agreement independently of the agreement, has been held perfectly valid. I will just mention the names of three; Western *v.* Russell;[2] Thomas *v.* Dering;[3] and Gibbins *v.* the Board of the Metropolitan Asylum.[4] These cases," he added, "settled the matter."[5]

A tender of a specification of contract for scavenging docks which concluded with an engagement "to execute a contract on the preceding conditions within fourteen days," was held not to bind the person tendering to produce the contract for execution, as it would be the duty of the party to whom the tender was made to prepare the contract; and in the same case it was held that a contract for scavenging the docks was not within any of the exceptions to the general rule, that a corporation aggregate can only be bound by contract under seal, as to which see *post.*[6]

When a building contract or contract for the execution of works of any kind is of considerable magnitude, the parties to it before concluding the contract by the affixing of their respective signatures, will of course act under the advice of their solicitors. Tradesmen connected with the building trade, however, sometimes are found to enter into contracts almost without having a knowledge of their contents, and without reading them, or even understanding the conditions which they undertake to fulfil, and without a duplicate contract being made to be retained in their possession. Such persons cannot be too earnestly cautioned to use the utmost circumspection in this respect, and not to enter into a contract without an examined duplicate of it, duly signed, being left in their possession. On the other hand, the employer should be careful, on his part, to see that in respect of the work contracted for, he does not waive any of the conditions of the contract; for if the work be badly done, he may find that, owing to his waiver of a material condition of the contract—as the certificate of the architect or surveyor being given before payment for the work—he is without any remedy.

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[1] 3 Bro. C. C. 161.

[2] 3 V. and B. 187.

[3] 1 Kee. 729.

[4] 11 Beav. 1.

[5] Ridgway *v.* Wharton, 4 Jur. (N. S.) 173, 178.

[6] London Dock Company *v.* Sinnott, 8 El. and Bl. 347; 27 L. J. Q. B. 129; 4 Jur. (N. S.) 70.

2. *By Letters or Correspondence.*

In order to constitute an agreement by letters, the answer to the written proposal must be a simple acceptance of the terms proposed, without the introduction of any new or different terms;[1] and in order to form a contract by letter, of which the court will decree a specific performance, nothing more is necessary than that the amount and nature of the consideration to be paid on one side and received on the other, should be ascertained, together with a reasonable description of the subject matter of the contract.[2] In every contract there must be mutuality, otherwise specific performance will not be decreed;[3] and if it be signed by one party only, it will be good to charge him within the statute of frauds;[4] and it may be enforced in equity against him; but by filing a bill for specific performance, it becomes binding on the other also.[5] Letters, however, may not in themselves constitute a complete contract. Therefore, where a letter signed by both parties specifying the prices to be charged for some work to be done, it was held not to be a complete contract; and that parol evidence was admissible of a contemporaneous agreement as to the period of payment.[6]

With regard to the acceptance of a contract by letter, it has been held, that a letter offering a contract does not bind the person to whom it is addressed to return an answer by the very next post after its delivery, or to lose the benefit of the contract, and that an answer posted on the day of receiving the offer is sufficient. A contract in such a case is accepted by the posting of a letter declaring its acceptance, and a person putting into the post-office a letter declaring his acceptance of a contract offered has done all that was necessary for him to do, and is not answerable for casualties occurring at the post-office.[7] This, it should be observed, was in affirmation of a judgment of the Court of Sessions in Scotland, with reference to a contract for the sale of iron, and in some degree had reference to the peculiar customs of the iron trade. It has, however, an important bearing on the subject of contracts generally.

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[1] Holland *v.* Eyre, 2 Sim. and S. 194.

[2] Kennedy *v.* Lee, 3 Mer. 441.

[3] Howell *v.* George, 1 Madd. 1.

[4] Seton *v.* Slade, 7 Ves. J. 289.

[5] Martin *v.* Mitchell, 1 J. and W. 426.

[6] Knapp *v* Harden, 1 Gale, 47.

[7] Dunlop *v.* Higgins, 1 H. L. Cas. 381; 12 Jur. 295.

Where an agreement has been commenced by letter, but in the course of the treaty an offer made by letter is verbally rejected, the party who has made the offer is relieved from his liability, unless he consent to renew the treaty. The party who has rejected the offer cannot afterwards, at his own option, convert it into an agreement by acceptance without a renewed offer from the other party.[1] A letter making an offer, and adding, "Send a reply by return of post," is conditional, and does not constitute a contract in the absence of a reply.[2]

3. *How Construed.*

Generally with regard to instruments in the nature of a contract, it is to be observed that in construing them the words are to be construed according to their strict and primary acceptation, unless from the context of the instrument and the intention of the parties to be collected from it, they appear to be used in a different sense, or unless in their strict sense they are incapable of being carried into effect; subject, however, to this, that the meaning of a particular word may be shown by parol evidence to be different in some particular place, trade, or business, from its proper and ordinary acceptation.[3]

4. *Stamps.*

It is important that contracts and agreements between parties should bear the proper stamps. If unstamped, or if bearing stamps which are not of the proper value, they cannot be enforced by either party until they are properly stamped. Moreover, if an agreement cannot be read in evidence for want of a stamp, the party seeking to enforce it cannot recover the value of the work and labour to which the agreement refers, although the other party to it may have had the benefit of such work and labour.[4] The Court cannot look at an unstamped contract to ascertain whether certain works are included in it or not.[5]

A specification referred to in an agreement, but not annexed thereto, may be stamped as a separate instrument; and where several persons enter into a contract to do respectively certain different kind of works set forth in a specification, the contract so entered into is not joint, but several; and the part of the specification only which relates to the work to be done by any one of the contractors is part of the agreement of such contractor, and may be stamped accordingly by him.[1]

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[1] Sheffield Canal Company *v.* Sheffield and Rotherham Railway Company, 2 Railway Cas. 121.

[2] Kirky *v.* Trotter, 1 F. and F. N. P. 544.

[3] Malan *v.* May, 13 Mee. and W. 511; 14 L. J. Exch. 48; 9 Jur. 19.

[4] Hughes *v.* Budd, 8 Dowl. P. C. 478.

[5] Vincent *v.* Cole, 3 C. and P. 481; M. and M. 257.

5. *Conditions Precedent.*

A condition precedent in a contract is a requirement that something shall be done either by one of the parties to the contract, or by some third party before the right to payment under the contract shall accrue; thus, a bill in Equity stated that the plaintiffs contracted with a corporation to perform certain works, and the corporation agreed to pay for them in a specified manner, with a proviso that no sum of money should be considered to be due and owing, nor should the plaintiffs make any claim against or demand upon the corporation for or on account of any work executed by them, unless the engineer of the corporation should certify the amount, and that the plaintiffs were reasonably entitled thereto; and that in cases of disputes or differences arising touching the works, or the construction of the contract, or concerning any certificate, order, or award which might have been made by the engineer, such disputes or differences should be referred to and decided by the engineer of the corporation; and that it should not be competent to the plaintiffs or the corporation to except, at law or in Equity, to any hearing before or determination of the engineer; nor should the engineer be made party to, or required to defend or answer any suit or proceeding at law or in Equity at the instance of the corporation or of the plaintiffs; nor should he be required or compellable by any proceedings whatsoever, either at law or in Equity, or otherwise, to answer or explain any matter touching or relating to any certificate made by him. The bill also stated that a portion of the works had been completed by the plaintiffs; but that the engineer, acting under the direction and in collusion with the corporation, withheld his certificate of such completion, and thereby prevented the plaintiffs from receiving payment therefor; and that he also, under the like direction, refused to certify the correctness of the plaintiffs' claim in respect of such work, or to deliver his award as arbitrator in respect thereof. The bill (which was filed against the corporation and their engineer) prayed that the with-holding of the certificate by the engineer might be declared a fraud upon the plaintiffs, and that they might be declared entitled to receive such an amount of money for the work performed by them as they would have been entitled to if such certificate had been granted; and it was held by Stuart, *V. C.*, and Erle, *J.*, that it was of the very essence of the contract that no sum should be considered due and owing to the plaintiffs on account of any of the works executed by them, unless the engineer should certify the amount; and it appearing that the engineer had not refused to discharge his duty according to the contract, and had not done anything to disqualify himself, but that he was ready and willing to discharge the same according to the terms of the contract, but that the contractors declined to submit to his decision, the bill was dismissed, with costs, as against the defendants.[1]

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[1] Briggs *v.* Peel, 11 Jur. 611.

This decision having been appealed against, it was affirmed by the Lord Chancellor on the ground that the certificate of the engineer was a condition precedent to the right of the plaintiffs to recover as well in Equity as in law.[2] In giving judgment his lordship said, "The plaintiffs are driven to sustain their bill by insisting that the accounts are so complicated, intricate, and voluminous, that they cannot be perfectly dealt with or disposed of by any action at law. . . . . I should always be disposed to regard the jurisdiction of the Courts of Law and Equity with respect to complicated accounts as so far concurrent that, where the parties have proceeded at law, I should be unwilling to withdraw the case from the court merely because a Court of Equity could more conveniently dispose of it; and I should not think myself at liberty to refuse the aid of this Court, when invoked, because a Court of Common Law could completely settle the whole of the disputed accounts. . . . I should not think therefore that the mere fact of the accounts being capable of settlement and adjustment in a Court of Law would have prevented the plaintiffs being entitled to an account, if there was no other objection in their way."

The following case further illustrates the bearing of the architect's certificate:—A building contract contained a proviso that the payments thereby agreed to be made to the builder should only be due, provided the certificate of the surveyor of the employer for the time being should first be obtained; and an action being brought for the balance alleged to be due on the contract, it was held that under the general issue the absence of the certificate of the surveyor was a good answer to the action; and that the plaintiff was not at liberty to show that it was withheld fraudulently or collusively with the defendant.[1]

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[1] Scott *v.* Liverpool Corporation, 27 L. J. Chanc. 641; 4 Jur. (N. S.) 402.

[2] Ib. 5 Jur. (N. S.) 105.

A condition in a contract to refer to arbitration any question which may arise out of the contract will be, if so stated, a condition precedent to the right to sue on the contract; but unless the condition expressly stipulate that, until arbitration had, no action shall be brought, its performance is not precedent to the right to sue on the contract. In cases where the condition is not precedent to the right to sue, if either party sue without offering to refer, it is open to the other party to apply for a reference under Section 11 of the Common Law Procedure Act, 1854.[2] Again, if a contract provide that disputes should be settled by the usual mode of arbitration, but that the contract should not be void on that account, the Court will, under the Common Law Procedure Act, 1854, stay proceedings on an action to recover damages for breach of warranty, if there be nothing on the record to show that any question of fraud could arise, and nothing in the affidavits to show such an alteration of circumstances as to induce it to withdraw the matter from the mode of investigation which the parties themselves had selected.[3]

Where a building is intended to be erected, or repairs done upon or alterations made to a building on a man's own land, under a special contract containing a condition precedent, which is unperformed by the contractor, the mere fact of the owner taking possession does not raise any inference of waiver of the condition precedent, or of entering into a new contract; and therefore an action will not lie either upon the special contract, or upon an implied contract to pay for the work done according to its value.[4] In a building contract it was provided that the contract should not be vacated by any additions or alterations, but that the price to be paid for such alterations should be settled by a surveyor, who was to be sole arbitrator in settling such price, and all disputes arising in or about the premises; and the employer agreed to pay certain proportions of the contract price upon receiving a certificate in writing signed by the surveyor, testifying that certain portions of the building had been done, and his approval thereof, and the balance that should be found due after deducting the previous payments, within two months after receiving the surveyor's certificate that the whole of the works had been completed to his satisfaction; and it was held that the surveyor's certificate was a condition precedent to the builder's right to sue upon the contract in respect of alterations. And where the architect checked the builder's charges and sent them to the defendant, it was further held that this did not amount to such a certificate of satisfaction as to enable the builder to sue the defendant, although the defendant had not objected to pay, on the ground that no sufficient certificate had been rendered.[1] Again, where work is not duly performed according to a special contract, and there is a common count in the declaration for work, labour, and materials, and also a common count for the same as well as a special count, it is open to the defendant at the trial to prove the inferiority of the work and materials; and in that case the plaintiff would only be entitled to recover on the common count for so much as the work, labour, and materials are worth.[2] Then where a specific contract has not been performed, a plaintiff cannot recover upon it on a general *indebitatus* count; and the defendant, therefore, on a plea of *non assumpsit* or *nunquam indebitatus*, may show that the work was done under a specific contract, and that such contract was not performed. Where, however, the plaintiff is entitled to recover a *quantum meruit*, the plea of *non assumpsit* or *nunquam indebitatus* to such a count puts in issue the quantum of the value; and if no value have been given, the plaintiff would not be entitled even to a nominal sum.[3]

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[1] Milner *v.* Field, 20 L. J. Exch. 68.

[2] Roper *v.* Lendon, 28 L. J. (N. S.) Q. B. 260. See also Horton *v.* Sayer, 5 Jur. (N. S.) 989.

[3] Hirsch *v.* Jm. Thurn, 4 C. B. 569.

[4] Munro *v.* Butt, 4 Jur. (N. S.) 1231, Q. B.

If two persons enter into a contract in which there is a condition precedent of an act to be done by one of them within a certain time, which is omitted to be done, and after some delay the other party to the contract offers to renew the contract provided the act is done within a week, and the offer is not distinctly accepted, he is at liberty to retract the offer at any time before the other party has signified his acceptance of or acted upon the terms of it.[4]

Again, if a contract contain a condition precedent, and a party to it by his own act disables himself from fulfilling his contract, he thereby makes himself at once liable for a breach of it, and dispenses with the necessity of any request that he will perform it by the party with whom the contract is made.[5]

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[1] Morgan *v.* Birnie, 3 M. and S. 76; 9 Bing. 672.

[2] Chappel *v.* Hicks, 2 C. and M. 214; 4 Tyr. 43.

[3] Cousins *v.* Paddon, 4 Dowl. P. C. 488; 1 Gale, 305.

[4] Gilkes *v.* Leonino, 4 Jur. (N. S.) 537, C. P.

[5] Lovelock *v.* Franklin, 15 L. J. Q. B. 146; 10 Jur. 246; Shut *v.* Stone, 3 Dow. and L. 580; 15 L. J. Q. B. 143; 10 Jur. 245; Caines *v.* Smith, 3 Dow. and L. 462; 15 Mee. and W. 189; 15 L. J. Exch. 106.

6. *Covenants.*

With regard to covenants, it is to be observed that no precise form of words is necessary to constitute a covenant; and that it is enough if the intention of the contracting parties is apparent from the general scope of an instrument under seal; more especially where it commences with the words "It is hereby agreed by and between the said parties in manner following."[1]

A covenant in a demise of land for building purposes to the effect that, on the buildings "being covered in, they [the defendants] would cut good and sufficient roads in, through, and over the meadows, and construct a good and sufficient sewer under the intended roads for the common use of the plaintiff and all other lessees or tenants of the other portion of the meadows," the plaintiff also covenanting to pay as his proportion towards the repair of the roads to be laid down; it was held that the defendants' covenant was not satisfied by their making a road up to the plaintiff's houses, but that as soon as those houses were covered in, the defendants were bound to make good and sufficient roads over the whole meadows as contemplated by the building scheme, although no other houses than the plaintiff's had been built.[2]

Again, a covenant within a given period to erect certain buildings, "the whole of which were to be left to the superintendence of the plaintiff," is an absolute covenant; and the clause respecting the superintendence merely grants liberty for the plaintiff to superintend the buildings, but imposes no duty, so as to make the superintendence a condition precedent or concurrent.[3]

An owner of an estate covered it with houses, and sold some of them subject to a covenant not to carry on any trade, business, or calling therein, or to otherwise use or suffer the same to be used, to the annoyance, nuisance, or injury of any of the houses on the estate; upon a bill for an injunction to restrain the carrying on of a school in one of such houses, it was held that the carrying on of a ladies' school in one of the houses was a breach of the covenant, and that the covenantee had not waived the benefit of the covenant, though he had permitted other houses held under the like covenant to be used as schools.[4]

It is necessary to bear in mind that, if a person contract with

[1] Wood *v.* Copper Miners' Company, 7 C. B. 906.

[2] Mason *v.* Cole, 4 Exch. Rep. 375.

[3] Jones *v.* Connoch, 19 L. J. Exch. 371, Exch. Ch.

[4] Kemp *v.* Sober, 1 Sim. (N. S.) 517; 20 L. J. Chanc. 602; 15 Jur. 458.

another to build a house or other premises within a reasonable time, it will be no defence to an action for breach of the covenant that a reasonable time had not elapsed since the plaintiff required the defendant to build the house. In such a case the terms of the contract avoid the necessity for any requisition by the plaintiff to the defendant to build the house.[1]

The following is an illustration of the law as to implied covenants in contracts. An agreement was entered into between a corporation and a contractor for works, whereby the corporation agreed to let to the contractor the making, constructing, and completing works which they were empowered by Act of Parliament to make, according to a specification and plans annexed, at or for 12,305*l.*, and "on the conditions and in manner hereinafter mentioned;" and the contractor agreed to take the works and complete the same in manner set forth in the specification, and for the sums and subject to the provisions thereinafter mentioned. The agreement went on to provide that the contractor should construct certain of the works, described in the specification as the "first portion" thereof, for 7318*l.*, to be paid as in the specification mentioned; and that he should also construct the "second portion" so described for 4987*l.*, subject to the following provisions, that is to say, "That the assent of the Commissioners of Woods and Forests shall be given to the corporation to carry out the said last-mentioned works, so far as the same affect the land or soil of the Crown, and that the corporation are not prevented from carrying out the last-mentioned works by the Eastern Union Railway Company; and further, that the approbation of the Lords Commissioners of the Treasury is given to the corporation to borrow on bond or on mortgage of the rates and property of the borough, such sum or sums of money as may enable the corporation to pay for the same." In an action by the contractor against the corporation upon this agreement, the declaration assigned for breach that the corporation had omitted within a reasonable time to procure and obtain the assent of the Commissioners of Woods and Forests, and the approbation of the Lords Commissioners of the Treasury, or to permit the contractor to commence the second portion of the works; it was held that there was nothing in the language of the agreement to warrant the Court in implying a covenant on the part of the corporation to obtain the assent and approbation therein mentioned.[2]

A covenant not expressly embodied in a contract may be implied. Where a deed recited that a Waterworks Company had determined to construct a well, and that the engineers of the company had prepared the necessary drawings, and had made a general specification referring to the drawings of all the works to be done, and of the materials to be found and provided for the purpose, &c.; and the specification so made, which was under the seal of the company, contained the following passage:—"The contractor will be required to sink the well to the depth of 120 feet, after which the company will undertake the erection of the permanent steam-engine, and permit the pumping to be performed by it, sufficient interval of time being allowed for the erection of the steam-engine, and such time added to the period assigned to the contractor for the performance of the work:" it was held that there was an implied covenant on the part of the company to erect the permanent steam-engine as provided in the specification.[1] In an action of debt for work and labour on such a contract, the defendant, on the plea that he never was indebted, may go into evidence to prove that the work was done under such circumstances, and show that there was no implied contract to pay anything; upon this plea, however, the defendant cannot go into evidence of misconduct, except such as goes to show that there was an implied contract to pay for the work.[2]

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[1] Fisher *v.* Ford, 4 Jur. 1034.

[2] Smith *v.* Harwich (Mayor, &c.), 2 C. B. (N. S.) 651; 26 L. J. C. P. 257.

With regard to the payment of instalments as they become due under express stipulations of a contract, it has been held that a proviso that no instalment payable pursuant to the covenant should be recoverable or capable of being enforced, nor should any proceedings for that purpose be commenced until after the expiration of one month from the day upon which the same should have become payable, does not operate merely as a covenant not to sue; but that the effect of the proviso was to extend the period for payment for one month; therefore in such a case no action is maintainable until the month shall have expired.[3]

7. *Breach of Contracts.*

Leave and licence cannot be pleaded to a breach of contract, but the defendant must show an exoneration or a discharge from the conditions of the contract;[4] and if a builder undertake a work of specified dimensions with specified materials, and deviate from the specification, he cannot recover upon a *quantum valebat* for the work, labour, and materials.[1]

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[1] Knight *v.* Gravesend and Milton Waterworks Company, 2 H. and N. 6.

[2] Cooper *v.* Whitehouse, 6 C. and P. 545.

[3] Foley *v.* Fletcher, 28 L. J. Exch. 100.

[4] Dobson *v.* Espie, 2 H. and N. 79; 26 L. J. Exch. 240; 3 Jur. (N. S.) 470.

In a case in which it was covenanted that the employer's engineer should have power to direct the way in which various portions of the work should be done, and if it should appear to him that they were not properly executed and with due expedition, it should be lawful for him to give notice to the contractor to alter any improper, or to supply proper materials and labour, and with due expedition to proceed therewith; and if the contractor should within seven days fail to comply, the engineer might take the work out of his hands; and the engineer give notice to the contractor to supply proper and sufficient materials and labour for the due prosecution of the works, and with due expedition proceed therewith: the contractor for seven days having refused to comply with a notice given in pursuance of the contract "to supply all proper and sufficient materials and labour for the due prosecution of the work, and with due expedition to proceed therewith," the engineer thereupon took the work out of his hands. An action being brought on the contract, it was held that the notice given to the contractor by the engineer was sufficiently specific.[2]

With regard to contracts for the sale of articles of manufacture, as machines, &c., it has been held that if a person contracts with another for the sale of a particular article and breaks his contract, the proper damages are such as may fairly and reasonably be considered either as arising naturally from the breach of contract, or such as may reasonably be supposed to have been in the contemplation of the parties to the contract at the time they made it as the probable result of the breach of it.[3] Moreover, where a contract is made under special circumstances which are communicated by one of the contracting parties to the other, the damages resulting from a breach of the contract, which the parties would reasonably be supposed to have contemplated, are the amount of injury which would ordinarily follow from such a breach of contract under the special circumstances. But if the special circumstances are unknown to the party breaking the contract, he, at the most, can only be held to have contemplated the amount of injury which would arise generally, and in the great multitude of cases, not affected by any special circumstances from such a breach of contract.[1]

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[1] Ellis *v.* Hamlem, 3 Taunt. 52.

[2] Pauling *v.* Dover (Mayor, &c.), 10 Exch. 753; 24 L. J. R. (N. S.) Exch. 128.

[3] Smeed *v.* Foord, 28 L. J. (N. S.) Q. B. 178.

When a specific thing is the subject of a contract, and it is doubtful what that specific thing is, any fact may be given in evidence which is within the knowledge of both parties in order to identify it. Where a preliminary conversation passed between two persons as to wool which one of them had for sale, and the vendor said that, besides his own clip of wool, he had bought the clips of some of his neighbours, naming them, and that altogether the quantity was 2300 stones, 100 stones more or less; shortly after the other party (S.) wrote to the vendor that he desired him to offer "for your wool" 16*s.* per stone delivered, and to which the vendor replied accepting the offer. In pursuance of this contract the plaintiff tendered 2505 stones, which (S.) the defendant rejected, on the ground of excess in quantity. An action being thereupon brought, and a nonsuit entered with liberty to move to enter the verdict for the plaintiff, it was held *totam curiam* that the preliminary conversation was admissible to show to what the contract referred; and (per Campbell, *C. J.*, and Erle, *J.*, Wightman, *J.*, *dissentiente*) that the written contract did not make it a condition that the quantity should not exceed 2300 by more than 100 stones, and that it was a question for the jury whether the excess was so unreasonable as to entitle the defendant to reject the wool tendered.[2]

If a contract be entered into for the execution of works as a whole, it will not be less a contract as to the whole, because particular parts of the work are required by the contract to be constructed in a particular manner, and nothing is said as to certain other works required to complete the contract as a whole. A carpenter, &c., agreed to build a house for a gentleman who prepared a specification which contained particulars of the different portions of the work. Under the head of "Joiner and Carpenter" there was specified the scantling of the joists for the different floors, the rafters, ridge, and wall pieces; but no mention was made of the flooring. The specification stated that the "whole of the materials mentioned or otherwise in the foregoing particulars, necessary for the completion of the work, must be provided by the contractor." At the foot of the specification the contractor signed a memorandum whereby he agreed with the employer "to do all the works of every kind mentioned and contained in the foregoing particulars according in every respect to the drawings furnished or to be furnished, for a certain sum, and the house to be completed and fit for occupation by a certain day." The contractor prepared the flooring boards, brought them to the premises, and planed and fitted them to the several rooms, but refused to lay them down without extra payment, because the flooring was not mentioned in the specification; whereupon the other party to the contract put an end to it, took possession of the works, and proceeding to complete the building used the flooring boards so prepared and fitted. In an action brought by the contractor for work, labour, and materials, it was held that he was not entitled to recover for the flooring as an extra, because it was included in the contract, though not mentioned in the specification; and also that the plaintiff in the action could not maintain trover for the flooring boards left on the premises by him and subsequently used by the defendant.[1]

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[1] Hadley *v.* Baxendale, 9 Exch. Rep. 341; 23 L. J. (N. S.) Exch. 179.

[2] Macdonald *v.* Longbottom, 33 L. T. 200.

The following case may be instanced as to the effect of a forfeiture clause in a builders' contract for delay in the completion of the building by the time stipulated. The plaintiffs on the 19th April, 1836, entered into a written contract to build for the sum of 1700*l.*, a brewery for the defendants, so far as regarded the carpenters' work within the space of four months and a half next ensuing the date of the agreement, and in default of completing the same within the time therein before limited, to forfeit to the defendants 40*l.* per week for each week that the completion of the work should be delayed beyond the 31st August; the amount to be deducted from the sum of 1700*l.* as liquidated damages. The plaintiffs did not begin the work for four weeks after the date of the agreement, in consequence of the defendants not being able to give them possession; they were afterwards delayed one week by the default of their own workmen, and four weeks by default of the masons employed by the defendants, and the work was not completed until five weeks after the time limited; and it was held that under the circumstances the defendants were not entitled to deduct from the 1700*l.* any sum in respect of the delay, either for the one or the four weeks.[2] In another case a contractor agreed to execute the works of a public company, and bound himself for the due performance of his contract by forfeitures, subjecting himself to the arbitrary decision of a person nominated by the company as to his liability; it was held that he was not entitled to relief in Equity against the forfeiture.[3]

The first count of a declaration was on a special agreement for the plaintiff to build a house for the defendant at an agreed price, and stated that the plaintiff had bestowed work on the house, and that the defendant abandoned the contract and hindered the plaintiff from completing it; and there was a second count for goods sold. To these the defendant pleaded *non assumpsit*, and that he did not abandon the contract or prevent the plaintiff from completing the house. The particulars of the demand, it should be observed, were for work and materials under the agreement. It was held that if the defendant had not hindered the plaintiff from completing the house, the plaintiff could not recover anything except for extra work which was not in the contract; and that the fact that the defendant, when asked for money, had said, he would never pay a farthing, was not proof that the contract had been abandoned, as the defendant was not then liable to pay anything, the work not being completed.[1]

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[1] Williams *v.* Fitzmaurice, 3 H. and N. 844.

[2] Holme and another *v.* Guppy and another, 3 Mee. and W. 387.

[3] Ranger *v.* Great Western Railway, 2 Jur. 787.

If a plaintiff declare on a *quantum meruit* for work and labour done, and materials found, the defendant may reduce the damages by showing that the work was improperly done, and may entitle himself to a verdict by showing that it was wholly inadequate to answer the purpose intended.[2] On a special contract for work done under the contract, and for work, labour, and materials generally, the defendant may give in evidence that the work has been done improperly, and not agreeably to the contract; and the plaintiff in that case will only be entitled to recover the real value of the work done and the materials supplied.[3]

The following shows how important it is before an action is brought for damage sustained, that the proper form of action should be adopted.

A and B having entered into a joint agreement with a railway company to execute a contract called "the Morley Contract" for the construction of a tunnel upon the line, A assigned all his right and interest in the contract to B, and the latter agreed to pay A a given sum " on the completion of the said contract." After this agreement had been entered into between A and B, it became necessary to alter the levels of the line, and B, by agreement with the company, abandoned the contract, and another was entered into between the company and other persons, under which the tunnel at the altered level was completed. An action having been brought by A against B for the fulfilment of their mutual contract by B, it was held that A was not in a position, upon the completion of the substituted

[1] Rees *v.* Lines, 8 Car. and P. 126.

[2] Farnsworth *v.* Garrard, 1 Camp. 38.

[3] Chapel *v.* Hicks, 2 C. and M. 214; 2 Tyr. 43.

contract, to maintain an action against B for the payment of the sum stipulated to be paid by his agreement with A, inasmuch as "the Morley Contract" never was completed.[1] In such a case, however, it would seem that A might have some claim against B for damages, though he could not recover on the contract.

Though an agreement may be put an end to by consent, the obligations incurred under it may nevertheless be enforced, and it will not be necessary to sue on the agreement. Thus, if an agreement be entered into for the letting of land to a builder on building leases, and to advance him money to build houses on the land, the money advanced may be recovered in *assumpsit* as money lent, notwithstanding that the agreement was rescinded.[2]

Time may be of the essence of a contract; therefore where a defendant agreed to supply the plaintiff with 150 tons' weight of iron girders at a certain price per ton, and according to plans to be furnished by plaintiff. Plans were furnished within a reasonable time from the date of the agreement, and at the same time fourteen tons' weight of girders were ordered. Four months after the date of the agreement, the fourteen tons were demanded, and other plans were furnished and orders given for sixty tons more girders. The defendant then repudiated the contract, and an action of *assumpsit* being brought, it was held that the contract was entire; and that, as the plaintiff had not furnished plans for the whole 150 tons within a reasonable time from the date of the agreement, he could not recover for the non-delivery of the fourteen tons for which plans had been furnished within a reasonable time from such date.[3] But it must be remembered that where a thing is to be done within a reasonable time, the reasonableness of the time is a question wholly for the jury.[4]

If a contract be entered into for the execution of certain works to be used for a temporary purpose, and a condition of the contract be that the material used in the construction be received back again; the person for whom the work is executed is bound to put the contractor in possession of the materials. Therefore, where plaintiff had agreed with defendant, who was the mayor of the borough, to erect the hustings for the election of a Member of Parliament for the borough, "as before, with alterations, for 19*l.* 10*s.*, by receiving the wood back again, and to find labour, &c.;" and after the election was ended, the mob carried the wood of the hustings away; in an action for not returning the wood, it was held that the defendant was bound to return the wood by putting the hustings safely into the possession of the plaintiff.[1]

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[1] Humphries *v.* Jones, 5 Exch. 952; 20 L. J. Exch. 88.

[2] James *v.* Cotton, 7 Bing. 266; 5 M. and P. 26.

[3] Kingdom *v.* Cox, 17 L. J. C. P. 155; 12 Jur. 336.

[4] Nelson *v.* Patrick, 2 Car. and K. 641.

An agreement was entered into with a bricklayer in the following terms:—"I agree to perform all the labour necessary in the brickwork, &c., more particularly described in the specification hereunto annexed, to be measured by the surveyor, and paid for at the rate of, &c., on his certificate. Finally, in the event of my not proceeding satisfactorily, &c., and on my receiving notice, &c., I will withdraw all plant, &c. The money paid for wages to be paid weekly; the work executed and measured to be paid for once a fortnight." At the end of the specification were these words, "All scaffolding, &c., to be provided by the contractor without extra charge." Disputes having afterwards arisen, and an action brought for work and labour, and trover for poles, boards, and other materials or tools of a bricklayer, the judge directed the jury, as to the detention of the materials, that the defendant would not be entitled to retain them without an agreement to that effect; and that even if there was, it would give no right to use them; and the use of the articles would be a conversion in law. He further directed that the measure of damages to be given by the jury was the price for which the goods could be bought or hired.[2]

The following case illustrates the liability of a surety to a contractor's bond. The defendant was surety by bond to the plaintiff for the performance of a contract by a builder according to a certain agreement. By that agreement, the builder was to complete the works for a certain sum, and payment was to be made to him by the plaintiff, during the continuance of the work, by instalments—viz., three-fourths of the cost of the work certified to have been done every two months, and the remaining one-fourth one month after the whole was completed. The builder applied for and received advances from the plaintiff exceeding in amount the value of the work done by him, for some of which advances he gave security. The work not being done at the specified time, the plaintiff called in another builder to complete the work, and the amount paid to him, added to the advances made to the builder originally contracted with, greatly exceeded the original contract price. In an action against the surety on the bond, to which there was a plea of *non est factum*, it was held that the defendant might show, in reduction of damages, that the advances were made by the plaintiff not according to the contract, and that as the work had been completed within the contract price—*i.e.*, after deducting the advances made, not in accordance with the contract, the plaintiffs were only entitled to nominal damages.[1]

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[1] Fuller *v.* Patrick, 18 L. J. Q. B. 236; 13 Jur. 561.

[2] Poulton *v.* Wilson, 1 F. and F. N. P. 403.

If a licence be obtained to dig or quarry stone on the ground of another person, specific performance of the licence will be compelled by the Court; for, it is immaterial whether in form an agreement to dig stone be a licence or a lease so far as its construction by a Court of Equity is concerned. Thus, it was agreed that the land, the subject of the agreement, was to be laid bare and properly marked out; and the plaintiff being anxious to work a larger quantity of ground than he had previously worked, his agent measured off an additional plot of ground amounting to 1200 square yards, with the defendant's consent, and thereupon plaintiff entered into possession of the ground so marked off, and agreed to work the same at the price of 4*s.* 6*d.* the square yard. The defendant having brought an action of ejectment to recover the additional plot of ground, it was declared by the Court below, and affirmed on appeal to the Lord Chancellor, that the plaintiff was entitled to a specific performance of the agreement for a licence as regarded the 1200 square yards of ground.[2]

That which follows has a more direct bearing upon the rights of assignees under the bankruptcy laws; but it is also pertinent to the subject of the present work. A builder contracted with the trustees of a certain company to build them an hotel for a specified sum, and to provide all necessary materials (except iron-work and papering) to the satisfaction of their superintendent, with a proviso, that, in the event of the contractor becoming bankrupt, it should be lawful for the trustees to take possession of the work already done by him, and put an end to the agreement for the future, paying him a fair proportion for the work actually done. Before the work was completed, the contractor (who had received several sums of money on account to an amount greater than the value of the work done) became bankrupt, having in his workshop certain wooden sash frames destined for the hotel, and approved of by the superintendent for that purpose, into which certain pulleys, the property of the trustees, had been inserted; which frames having been brought by the trustees to the hotel, a demand of the sash frames, without mentioning the pulleys, was made by the assignees, to which the trustees returned a general refusal to give them up. Upon an action by the assignees to recover possession of the frames, it was held—1. That the property in them was not vested in the trustees by force of the contract, and subsequent approval by their superintendent. 2. That the circumstance of their pulleys being inserted into the sash frames did not render the trustees tenants in common with the assignees of the entire chattel. 3. That the money advanced by the trustees did not give them such a lien on the sash frames as authorized the refusal to deliver them up. 4. That by the true construction of the contract, a property passed to the trustees in such work only as was actually done and affixed to the reality by the bankrupt previous to the bankruptcy. 5. That the general demand and general refusal were sufficient evidence of a conversion of the sash frames as distinguished from the pulleys.[1]

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[1] Warre and another *v.* Calvert, 2 Nev. and P. 126; 1 Jur. 450.

[2] Nelson *v.* Bridges, 1 Jur. 753.

II.

CONTRACTS WITH CORPORATIONS.

THERE are rules to be observed on the part of architects, builders, and contractors, in regard to the execution or rather fulfilment of contracts, which, if neglected or set at nought, are sure to operate to the detriment of one or other of them. The chief rule is to observe a literal compliance with every provision of a contract, however apparently trivial it may appear to be, and upon no account to deviate from anything required to be done by either of the contracting parties in respect of matters of form or substance.

For instance, persons dealing with railway or other similar companies, being corporations, should always bear in mind that such companies are essentially different from an ordinary partnership or firm for all purposes of contracts, and especially in respect of evidence against them on legal trials. Persons so dealing should invariably insist upon all contracts with them being by deed under the seal of the company or signed by the directors, or otherwise executed in the manner prescribed by the Act of Parliament regulating the company; for there is no safety or security for any one dealing with such a body on any other footing. Moreover, it should be borne in mind that the same caution applies to any variation or alteration in a contract which has been made with the company; and that the secretary or other managing officer of the company has of himself no independent authority to bind the company by letters or documents signed by him.[2] These rules are most forcibly illustrated by the case of the contractor for the erection of the workhouse of the Billericay Poor Law Union in Essex, the facts of which are of such importance as to justify their being set out with more detail than would otherwise have been necessary.

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[1] Trip *v.* Armitage, 4 Mee. and W. 687; 3 Jur. 249.

[2] Williams *v.* Chester and Holyhead Railway Company, 15 Jur. 828 Exch.

By agreement under seal between the plaintiff of the one part, and the defendants, the Guardians of the Billericay Union of the other part, after reciting (*inter alia*) that the plaintiff had proposed to contract to erect the workhouse at Billericay, and perform all the works particularized in a specification prepared by S. and M. (the architects) for 5500*l.*, the plaintiff, in consideration of the payments to be made to him, agreed with the defendants that he would in a workmanlike manner do all the works mentioned in the specification at the times therein mentioned, and would completely finish the whole by the 24th June, 1840. That if the architects should think proper to make any alterations or additions in the progress of the works, they should give to the plaintiff written instructions for the same signed by them, and the plaintiff should not be considered as having authority for the execution of such additional works without such written instructions. And in consideration of the premises the defendants agreed that they would pay the plaintiff the sum mentioned at the rate of 75*l.* per cent. on the amount of the work done, and the remaining 25*l.* per cent. within thirty days from the full completion of the contract, provided that the plaintiff should not be entitled to receive any payment until the works on which the payments were to be made should have been completed to the satisfaction of the architects, who should examine and make a valuation of the amount so completed from time to time, and certify the same to the defendants, after which the plaintiff should be entitled to receive from the defendants the amount of payment at the rate before mentioned, which should be then due in respect of the works so certified to be completed. The plaintiff further bound himself that if he should fail in the completion of all the works by the 24th June, 1840 (unless hindered by fire or other cause satisfactory to the architects), he would pay to the defendants 10*l.* per week, by way of liquidated damages, so long as the work should remain incomplete. The declaration of the plaintiff averred that he had, to the satisfaction of the architects, executed all the works contracted to be done for 5500*l.*, and that during the progress of the works the architects required and authorized him to make certain additions thereto, "to wit, by means of certain written instructions, signed by the architects, confirmatory of and ratifying and establishing the said requisition and authority so given by them to the said plaintiff." That the plaintiff duly, and to the satisfaction of the architects, executed all the additional works so required by them, and that they duly made a valuation thereof, and certified the same to the defendants. The declaration then stated that more than thirty days had elapsed since the due completion of all the works, and that the defendants had taken possession of and accepted all the works as and for work done under and in pursuance of the agreement, and alleged as a breach the non-payment as well of the 5500*l.* as also the sum due for additions. The defendants traversed the averments in the declaration by pleas, some of which related to the original and some to the additional works. There were also pleas of payment of 5500*l.* after and before breach, which were traversed by the replication. The cause having been referred to an arbitrator, the arbitrator found that the plaintiff proceeded to execute the works, and that while they were in progress the architects required him to execute additional works; that the whole of the works, original and additional, were completed in a workmanlike manner, and to the satisfaction of the architects; but that by reason of the additions, the final completion of the works was necessarily delayed until December, 1840, at which time the defendants took possession of the whole. During the progress of the works, the architects from time to time delivered to the plaintiff certificates in the form of letters signed by them and addressed to the clerk to the Board of Guardians, stating that the board might safely advance the sum of £ to the plaintiff on account of the works executed. Certificates in this form to the amount of 5000*l.* were given, but in fact payments were made by the defendants to the amount of 6300*l.* These payments were made generally in respect of the works actually done, without distinguishing the one description from the other. No written directions were given by the architects for the additional works, except that letters were in evidence signed, some by S., and others by M., in which allusion was incidentally made to some of the additional works in progress, and containing suggestions as to the mode of executing them; and save also that long after the works were complete, the architects, on the application of the plaintiff, made a valuation of the additional works, which they estimated at 3133*l.*, and signed a paper stating that to be the amount of their valuation. In an action brought by the plaintiff against the defendants for work and labour under the contract, it was held—

1. That the deed in requiring written directions meant written directions before the additional work should be done, in which sense the averment in the declaration was to be understood, and

that the certificates, letters, and final valuation of the architects did not amount to such directions. 2. That the payments made on the certificates of the architects were to be treated as sums paid on account of whatever the plaintiff might eventually be entitled to recover; and the want of written directions being an answer to any claim in respect of the additional works, the plaintiff could not apply any part of the 6300*l.* in satisfaction of them. 3. That although the defendants had accepted the additional works, the plaintiff was not entitled to be paid on a *quantum meruit;* for the defendants, being a corporation, were incapable of making a new parol contract of that description. And 4. That the time of the completion of the works was not an essential part of the contract; and semble, that no valuation or certificate of the contract works was requisite after their final completion.[1]

In a subsequent case the soundness of the decision of the Court, in absolving the guardians of the union from liability in respect of the extra works executed without the written certificates of the architects, appears to have been doubted; but the case nevertheless illustrates the vital importance of architects, in giving orders for the execution of extra works, conforming in the minutest particular with the terms of the contract with the builder; and, on the other hand, the extreme danger which the builder runs if he executes works without first obtaining an authority for so doing in conformity with the terms of his contract; which he should, under no circumstances and under no degree of pressure, depart from.

It has been already said that persons dealing with corporations should bear in mind that they are essentially different from an ordinary partnership, or individuals, for all purposes of contracts, and especially in evidence against them on legal trials; and that they should insist upon all contracts with them being by deed under the seal of the corporation, or otherwise executed in the manner prescribed by the Act of Parliament regulating the corporation. The same observation applies in respect of any variation or alteration in a contract which has been made; and it should further be borne in mind, that the secretary or other officer of the corporation has of himself no independent authority to bind the corporation by letter or documents signed by him. Generally speaking, corporations are as much bound by their contracts as individuals where the seal is affixed in a manner binding on them; and where a corporation is created by Act of Parliament for particular purposes, with special powers, their contract will bind them, unless it appear by the express provisions of the statute creating the corporation, or by necessary and reasonable inference from its enactments, that the contract was *ultra vires*, or that the Legislature meant that such a contract should not be made.[1]

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[1] Lamprell *v.* the Guardians of the Billericay Union, 3 Exch. 283; 18 L. J. Exch. 282.

The general rule with regard to a contract is, that the contract which the parties solemnly make with each other shall bind both. But it is also an acknowledged principle that, notwithstanding any express contract which the parties may have made with each other, the conduct which one pursues to the other who acquiesces simultaneously and without objection, may itself amount to a waiver of the contract. This principle the Court upheld in a case where a contract between a builder and the guardians of a union, for building a workhouse according to certain plans, contained the following stipulation :—"It is also to be in the power of the Board of Guardians or of the architect (by the authority of the Board of Guardians) to direct such alterations to be made in the works during their progress as they may deem expedient, which alterations shall not vacate or make void the contract, but shall be performed by the contractor according to the directions he may receive ; and the value of the same, whether in addition or deduction, is to be ascertained by the said architect, and to be added to or deducted from the amount of the contract accordingly ; but no allowance is to be made to the contractor for extra or additional work, unless the same shall have been ordered in writing." In the progress of the works considerable extra work was found necessary ; and the contractor, by the direction of the architect and with the approval and sanction of the Board of Guardians, performed such extra work, but without a written order. The guardians afterwards having refused to pay for this extra work, a bill was filed by the builder against the guardians, praying that it might be declared that the defendants had waived or were not under the circumstances entitled to insist, as against the plaintiff, upon the necessity of any order or orders in writing having been given previous to the execution of any of the extra works, and that they might be decreed specifically to perform the contract, and to pay to the plaintiff the balance due to him, or that an account might be taken, &c. The defendants having put in a general demurrer to the bill for want of Equity, the demurrer was overruled, the Vice-Chancellor of England observing that it is quite consistent with the rules of Equity, that, notwithstanding the express contract, the parties have, by their own conduct, laid themselves under an obligation which the Court will make them fulfil.[1] This decision of the Vice-Chancellor was however appealed from to the Lord Chancellor and overruled, his Lordship observing, with reference to the fact that the extra works had been executed with the knowledge and sanction of the defendants, that the knowledge and acquiescence on the part of some of the guardians cannot affect their rights as members of the body corporate, in which character they were sued; and he thought that overruling the demurrer on the ground stated by the Vice-Chancellor would open a new head of Equity which could not be supported.[2]

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[1] Bateman *v.* Ashton-under-Lyne (Mayor, &c. of), 3 H. and N. 323 ; 27 L. J. (N. S.) Exch. 458.

Another case may be instanced in which serious loss was suffered by the contractors in consequence of their having executed works for a corporation which were not covered by their contract, and which is adverted to in the author's work on Public Health and Local Government. In the case referred to, it was held that the Local Board of Health for whom the works were executed, had no power to bind the rates unless by contracts entered into in the mode pointed out by the 11 & 12 Vict. c. 63; and that therefore a contract exceeding the value of 10*l.* for the performance of works and for carrying into execution the Public Health Act, 1848, made with the Local Board of Health, is not valid so as to enable the contractor to enforce it against the board, unless it be sealed with the seal of the board, and signed by five or more members thereof, and comply in other respects with the requirements of § 85 of the Act; for the section is not merely directory, but creates a condition which must be complied with.[3]

The rule of law is, that a corporation can only bind itself by deed (*see* "Comyn's Digest," tit. *Franchise* (F) 12, 13, and the authorities there referred to); but exceptions to this rule have been established, as in the case of corporations created for the purpose of carrying on trading speculations, where the nature of their constitution has been such as to render the drawing of bills or the making of particular kinds of contracts necessary for the purposes of the corporation. In those cases, the Courts hold that they would imply in those who are, according to the provisions of the Charter or Act of Parliament, carrying on the corporation concerns, an authority to do those acts without which the corporation could not exist. Special provision has, however, been made by the Legislature in regard to the manner in which contracts may be made by and with joint-stock companies in certain cases. Thus:—

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[1] Kirk *v.* Guardians of Bromley Union, 11 Jur. 49. [2] Ibid, 12 Jur. 85.

[3] Frend and Hamil *v.* Dennett, 4 C. B. 576; 27 L. J. (N.S.) C. P. 314; 4 Jur. (N.S.) 897.

Contracts with Public Companies, registered under the 19 & 20 Vict. c. 47, may by § 41 of that Act be made as follows—that is to say :—

1. Any contract, which, if made between private persons, would be by law required to be in writing, and if made according to English law, to be under seal, may be made on behalf of the company in writing, under the common seal of the company, and such contract may be in the same manner varied or discharged.

2. Any contract which, if made between private persons, would be by law required to be in writing, and signed by the parties to be charged therewith, may be made on behalf of the company, in writing, signed by any person acting under the express or implied authority of the company, and such contract may in the same manner be varied or discharged.

3. Any contract, which, if made between private persons, would by law be valid, although made by parol only, and not reduced into writing, may be made by parol on behalf of the company by any person acting under the express or implied authority of the company; and such contract may in the same way be varied or discharged.

All contracts made according to these provisions are effectual in law, and binding upon the company and their successors, and all other parties thereto, their heirs, executors, or administrators, as the case may be.

It may be further observed that by § 43 of the same Act, a promissory note or bill of exchange is deemed to have been made, accepted, or endorsed on behalf of any company registered under the Act, if made, accepted, or endorsed in the name of the company by any person acting under the express or implied authority of the company.

Wherever the purposes for which a corporation is created render it necessary that work should be done, or goods supplied, to carry such purposes into effect, the corporation cannot keep the goods or the benefit, and refuse to pay, and then say "no action lies: we are not competent to make a parol contract, and we avail ourselves of our own disability."[1]

Therefore, where the Guardians of a Poor Law Union gave a verbal order for iron gates for the workhouse, and the gates were supplied and adopted by the guardians, it was held that this was a contract coming within the exception, and that the corporation were liable.[2] Where, however, the Poor Law Commissioners, upon

[1] Clarke v. Curtfield, 21 L. J. Q. B. 349.

[2] Saunders v. St. Neots Union, 8 Q. B. 810; 15 L. J. M. C. 104; 10 Jur. 566.

a representation of the Board of Guardians under the 6 & 7 Wm. IV. c. 96, § 3, issued an order for a survey and plan of a parish for the purposes of that Act, and the guardians contracted, under seal, with a surveyor to execute the survey and plan for a certain sum, and after its completion verbally ordered him to prepare a reduced plan as a key to the larger one, which was accordingly executed and delivered to the guardians; it was held that, as the contract for the reduced plan was not under the seal of the Board of Guardians, nor incident to the purposes for which they were incorporated, it was not binding on them.[1]

In the following instance, a contract not under seal made by a corporation was sustained. The Guardians of the North Bierley Union by a resolution resolved that the plaintiff should be employed to make up the books of the union, and prepare the whole of the accounts for the audit; and in the interval their clerk committed suicide. The plaintiff having reported certain defalcations in the accounts, by another resolution of the guardians he was employed to ascertain how they affected the different parishes in the union. In an action for work and labour as an accountant to recover the value of his services, the defendants pleaded, as to a certain sum, payment into court, and as to the remainder never indebted. The defence was substantially that there was no contract under seal; but it was nevertheless held (Crompton, *J.*, doubting) that the plaintiff was entitled to recover.[2]

Another illustration may be cited of a case in which a corporation may be bound by a contract not under seal. The Guardians of the Poor of the parish of Brighton, incorporated under a Local Act, in pursuance of an order of the Poor Law Commissioners, advertised for designs for a workhouse and schools, in consequence of which several designs were sent in. One of them, with which the architect sent the following estimate of cost, "The building will cost, exclusive of enclosing walls, and with slight alterations, the sum of 5000*l.*," was selected. Ultimately it received the seal of the Poor Law Commissioners in testimony of their approval of it, and advertisements were then issued for tenders for the execution of the works.

The usage is for architects to employ a surveyor to take out the quantities, and for the successful competitor to add to his contract the surveyor's charges. The architect of the selected design employed the plaintiff, a surveyor, to take out the quantities from the plans and specifications for the schools, and make out copies of them for the lithographers, to be lithographed for the use of the builders who proposed to tender for the performance of the works. This having been done, in due course several tenders were sent in for the performance of the works in the erection of the schools, the lowest of which being 13,600*l.*, and more than the guardians had power to expend, they declined to accept either of the tenders. Afterwards the plaintiff sent in to the guardians the following claim:—

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[1] Paine *v.* the Guardians of the Strand Union, 15 L. J. M. C. 89; 10 Jur 308.

[2] Haigh *v.* the Guardians of the North Bierley Union, 31 L. T. 213.

> "To services rendered in taking off the quantities from the plans and specifications for the proposed Industrial Schools, Mr. H. H. C., Architect, bringing same into bills, and making out four copies of the several trades for the lithographers, say 1½ per cent. on the amount of the lowest tender. . . . . £204 0 0"

Upon this state of facts the question submitted for the opinion of the Court was whether the plaintiff was by the operation of the 220th section of the Brighton Local Act, 6 Geo. IV. c. clxxix., disentitled to recover his claim in the action which he brought against the guardians for his work and labour.

That section provided that all contracts or agreements made between the guardians and any other person or persons relating to "any act, matter, or thing, to be done in pursuance of that act," should be reduced into writing and signed by the parties thereto. Previous to the 7 and 8 Vict. c. 101, the Poor Law Commissioners had not power to direct that schools for pauper children should be erected. In pronouncing judgment for the plaintiff the Court said that the section of the Local Act referred to had a twofold operation —first, to prevent the necessity of all contracts entered into by the guardians being under seal; secondly, to prevent a contract by parol from being set up. In building a school under the direction of the Poor Law Commissioners, under the 7 and 8 Vict. c. 101, § 43, it was impossible to say that the guardians were acting in pursuance of the Local Act; and the Court were therefore bound to hold that a contract in writing under § 220 was not necessary in the present case, and therefore gave judgment for the plaintiff.[1]

One of the points above mentioned is illustrated by the following case, in which the liability of the corporation was upheld. The Guardians of the Witney Union employed an architect to draw a specification of a building, and he employed the plaintiff to make out the quantities. According to the usual custom, the plaintiff's work was to be paid for by the successful competitor for the building contract; but a dispute having arisen between the architect and defendants, they refused to go on with the building, upon which the architect sent in his bill to them, together with the plaintiff's bill for making out the quantities, and they paid the architect's bill only. An action having been brought against the guardians for the recovery of the amount of the plaintiff's bill, it was held that, as the defendants had by their own acts rendered it impossible that the "successful competitor" should defray the plaintiff's charges according to the understanding and custom, they were liable to the plaintiff for the amount of his charges.[1]

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[1] Armstrong *v.* Bowdidge, 16 C. B. 358.

In further illustration of the principle involved in the foregoing cases, the following may be cited :—

An incorporated company entered into a contract under seal with A. for the execution of certain works according to the terms of a specification annexed, which also contained provisions for extra work. A. entered upon the work under the superintendence of the company's engineer, and also under such superintendence and with the approbation of the engineer executed certain extra works, which, however, could not be considered as coming within the provisions of the contract under seal. A. afterwards made a claim upon the company to a much larger amount than that specified by the contract, and the directors paid him a large sum generally on account. By the 8 and 9 Vict. c. 16, § 97, the directors of such a company may make parol contracts without their being reduced into writing, where such contracts would, if entered into between private persons, be valid; and by § 98 of the same Act the directors are bound to enter minutes of such contracts in a book; and by one of the clauses of the special Act of the company, three of the directors constituted a quorum. An action having been brought by A. for the balance alleged to be due to him, it was held that, as there was not any evidence that the company had contracted for this extra work under seal, or that they had entered into a contract for the same under the terms of their special Act, or of any general Act authorizing the same, they were not liable to A. for the extra work so performed by him.[2]

It is open to question whether if at any time before the adoption and performance of a contract on the part of a corporation, not executed by the corporation under seal, it would be open to the other contracting party to insist that the contract was not binding on the corporation by reason of its not having been entered into under their common seal, and consequently not binding on such other party for want of mutuality. If, however, in such a case the contract is executed before action brought, and under which the defendant has received the whole benefit of the consideration for which he bargained, it would be no answer to an action of *assumpsit*, that the corporation itself was not originally bound by the contract, by reason of its not having been made under the common seal.[1]

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[1] Moon *v.* the Guardians of the Witney Union, 3 Bing. N. C. 814.

[2] Homersham *v.* Wolverhampton Waterworks Company, 6 Exch. 137.

Under certain circumstances a contract with a corporation may be enforced, though not in terms of the charter of incorporation. As where a company were incorporated by Royal Charter for trading purposes, and by the deed of settlement the directors were to manage the business of the company, but all contracts above a certain value were to be signed by at least three individual directors, or sealed with the seal of the company under the authority of a special meeting; and the company were sued on an agreement within the scope of the company's business, but above the prescribed value, and made by parol with the chairman, who, with his own hand, entered a memorandum of it in the minute book of the company: this agreement was recognised in correspondence with the secretary, and the plaintiff did work under it and received payment by cheques for it. These payments passed into the accounts of the company, and were audited and allowed; but there never was any contract signed by three directors or under the seal of the company. On a case stating these facts with power to draw inferences of fact, the Court held that the contract was ratified, if not authorized, by the company, and therefore binding.[2]

III.

EXTRA WORKS.

The course of business in entering into a contract with a builder or contractor is now to be described. After the plans have been settled and approved, the architect prepares the specifications of the works; the quantities have then to be taken out, and after the acceptance of a tender for the works, the conditions for the specific performance of the work are embodied in a formal contract by the solicitor of the employer. In some instances under special conditions the contract, having been duly executed, the bill of quantities of the works, with the prices of the contractor affixed, is sealed up and deposited with the architect until the work is completed. It however remains the property of the contractor, and though it may be referred to by the respective parties in order to ascertain the correctness of the account by a comparison of the prices charged with those in the bill of quantities, neither the architect nor the employer has a right to take or to demand a copy of it. When the account is finally settled, the proper course is for the architect to deliver it back to the contractor, whose trade secrets (which are his own legal property) might be divulged to competitive opponents if it fell into any other hands than his own, after the purpose for which it had been prepared had been fully answered.

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[1] Fishmongers' Company *v.* Robertson, 12 L. J. 185; 6 Scott, N. R.

[2] Reuter *v.* Electric Telegraph Company, 6 Ell. and Bl. 341.

The observations which are made elsewhere upon the importance of obtaining written authority in terms of the contract, for the execution of extra works not provided for by a contract with a corporation, apply with equal force when the contract is with a private individual. If, notwithstanding an express stipulation in a contract between a private individual and a builder, that no alterations or additions shall be admitted or paid for unless directed by the architect by a writing under his hand, the alterations and additions are made without such written authority, the employer will be at liberty to dispute the account for them, and to refuse a settlement. What amounts to a written authority may sometimes admit of dispute, especially if it do not clearly express what alterations or additions are thereby intended to be authorized; and great care should therefore be taken to leave no loophole for doubt upon a point which, if it exist, may lead to misunderstanding between the parties and litigation. It may be said that it is not possible to give a written authority for every extra-work which is directed to be done; but such an argument would not hold good in the face of an express stipulation in a contract; and therefore whether it be considered possible or not, builders will act advisedly in declining to make the required alterations or additions, unless they be ordered in writing, and their nature and extent be clearly expressed in the document. They need not, however, be necessarily expressed in words; for if they be clearly set out in a plan or drawing, signed by the architect, with words specifying or indicating the work to be extra, such would be considered as much an order in writing as if the whole of the details had been specified in words at length. Then if the principal extra work not in the original plans and specifications be ordered to be done, all the accessories of that work must be taken to be included in the order given for it. Thus, if a door or a window be ordered to be made, where no door or window is shown in the plans, the necessary accessories to a door or window must be taken to be included in the order; or if a wall be ordered to be made of greater or of less thickness than was originally intended, the alterations thereby required to be made in the adjoining work must necessarily be also included in the order for the alteration of the wall.

In the case of Lamprell *v.* the Guardians of the Billericay Union, elsewhere adverted to, it was held that the deed, in requiring written directions, meant written directions before the additional work should be done. Where it is practicable to do so, the order should be obtained before the work is commenced; but, nevertheless, if the work be begun, and the architect approve of it, and give the requisite order before it is finished, it would be a sufficient compliance with the contract. The rule with regard to extras may be thus stated:—There must be a written order, or something equivalent to a written order, either separate and distinct, or included in a principal order, given either before the commencement or whilst the extra work is in progress; or there must be a drawing or plan of the extra work to be done, signed by the architect of the building.

It is usually made a condition precedent in a contract that there shall be delivered by the builder or contractor to the architect or clerk of the works, a weekly account of the extra work done under the contract. What works are to be included in the weekly account may lead to much dispute, and it would be well, therefore, expressly to define in the contract what class or kind of work is to be accounted for weekly—whether of the extent of extra day-work, and quantity of the materials, or of other extra work which is to be the subject of measurement, and to be paid for according to measurement. The custom of the building trade is to include in the weekly account only the day's work and materials consumed in that work, but not extra works which can be measured; and it is not customary for the trade to render weekly accounts of any of the work covered by the contract and specifications.

The object of the weekly account is, not to inform the employer of the additional expense to which he is being put by alterations and additions being made to the building in the course of its erection, but to render an account of the time and materials used in extra works which cannot be measured, in order that the architect or clerk of the works may have an opportunity of ascertaining and checking the work whilst the details of it are fresh in his memory.

According to the recognised practice of the profession, the weekly account should contain only a statement of what is understood by "day work;" that is, of the time of the men and of the materials used in extra day work, and of work which is not in the contract, and is not capable of being ascertained by measurement.

How far an architect is justified in ordering extra works, not contemplated by the contract, without the express concurrence of his principal, depends entirely upon the understanding come to between them on the subject. Where, however, the architect is not directly empowered to make alterations in the plans without the concurrence of the employer, it would be his duty to inform the employer of the expenditure exceeding the contract, especially if it be likely to do so to any great extent. If the architect neglect to do this, much misunderstanding between the parties may arise; and although employers do, and must to a great extent trust to the discretion of their architects, the latter should not entirely rely on that trust for an exoneration of their having, on behalf of their principal, and unknown to him, incurred large bills for extra works.

It is important to bear in mind that if a builder be employed to execute works under a written agreement, he cannot subsequently claim for work done, but not included in the agreement, unless he prove an employment altogether distinct and separate from the agreement; and it is not sufficient to show that the works executed come within the description of extra works to enable the builder to recover the value of them.[1] It would seem that the written contract ought nevertheless to be produced, in order to show how far the additional works were connected with the works contracted for; but not if they were totally unconnected therewith.[2]

If, in such a case as the above, the employer himself directs the additional works to be done, he will be liable to the person to whom he gave the order. On the other hand, if they were ordered by the architect, the liability of the employer would depend upon the extent of the authority he gave to his architect in respect of the works. If he did not authorize the architect to order the execution of any works but those to which the agreement either directly or indirectly relates, he would be exonerated from liability; and, in that case, it would be for the builder to consider how far the architect had made himself personally responsible for having ordered the execution of works not coming within the scope of his general authority.

[1] Parton *v.* Cole, 6 Jur. 370.

[2] Holland *v.* Stevens, 5 Jur. 71.

In rebuilding a church, the architect employed by the defendants, after giving them an assurance that the whole of the works should not exceed a given sum, prepared a statement or bill of particulars, showing the quantities of the works to be performed by the contractors, and also prepared plans and a specification. The plaintiffs tendered for portions of the works, and their tender was accepted at a fixed sum. The architect then prepared a form of contract whereby the plaintiffs agreed to do certain things mentioned "according to the plans and the quantities there given by the architect;" and they signed the specification, the conditions of which stated that, if any doubt should arise during the execution of the works in making out the accounts, "the admission or allowance of claims should be judged of, determined, and adjudged by the architect without reference to any other person;" and that, "in all matters, the decision of the architect should be final." Although no time for the completion of the contract was named, it being left in blank, the defendants were to be subject to a penalty if the works should remain unfinished. The plaintiffs performed works in excess of the quantities stated by the architect in his bill of particulars, and claimed to be paid over and above the fixed sum in respect of such extra works; but the architect rejected the greater portion of such claims, and debited the plaintiffs with a sum (to which they did not consent) for delay in completing their contract. On a bill for a declaration that the plaintiffs were not bound by the conditions in reference to the claims being adjusted and all matters decided by the architect; that an account might be taken of what was due to the plaintiffs, and that they were not chargeable with any sum in respect of penalty for delay, it was held, first, that there was no ground for imposing the penalty for delay; and, secondly, that the plaintiffs were entitled to be paid, in addition to the fixed sum, for all quantities of work done by them beyond the quantities mentioned in the bill of particulars.[1]

Where work has been done under a written contract, evidence of extra work cannot be given without proof of the written contract, in order that it may appear what is within the contract[2] and what is not; and if such contract be inadmissible for want of a stamp, the judge cannot look at it for the purpose of determining whether or not the proposed evidence relates to it.[3] If, however, a person be employed to do work under a written contract, and a separate order for other work is afterwards given by parol during the continuance of the first employment, the written contract need not be produced by the plaintiff in an action for the second work.[1]

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[1] Kemp *v.* Rose, 4 Jur. (N. S.) 919.

[2] Jones *v.* Howell, 4 Dowl. P. C. 176.

[3] Buxton *v.* Cornish, 1 Dowl. and L. 585; 13 L. J. Exch. 91; 12 Mee. and W. 426, 8 Jur. 46.

Again, if a person binds himself to perform certain works according to a specification and other detailed and working drawings, to be furnished during the progress of the works, with power for the employer, by his surveyor, to direct additions or omissions, he must, in a plea of performance, *quoad* such parts in which no orders were given by the surveyor to vary and deviate from the original plan, show an authority in the surveyor to give such directions, or aver that the deviation or variation was an omission or addition.[2]

If a special contract for the performance of work has not been completed but remains open, an action for a *quantum meruit* for work and labour under the contract cannot be brought, for the contract is still open. But the case would be different if the other party to the contract refused even to pay anything. The value of extra works performed in connexion with the works specified in the contract may, however, be recovered, notwithstanding that the contract itself is not performed.[3]

When one person contracts to do certain work in materials supplied to him by another (as where he contracts to survey a parish, and to set down the results of such survey in a map upon paper furnished to him by his employer), his right to sue for work and labour is complete as soon as he has finished the work and has given his employer a reasonable opportunity of ascertaining its correctness; and if (there being no contract for a specific price) he demand more for the work than a reasonable price, and refuses to deliver it except on payment of such larger price, that will not preclude him for sueing for and recovering a reasonable price.[4] So where work is done under a special contract and for estimated prices, and there is a deviation from the original plan by the consent of the parties, the estimate is not excluded, but is the rule of payment so far as the special contract can be traced; and for any excess beyond it the party is entitled to his *quantum meruit*.[5] But where a tradesman finishes work differing from the specification agreed on, he is not entitled to the actual value of the work, but only to the agreed price, minus such a sum as it would take to complete the work according to the specification;[1] and, per Lord Tenterden, where work is undertaken on contract at a given price, the employer is not liable to any greater amount by consenting to alterations from the original plan, unless he is either expressly informed, or must necessarily, from the nature of the work, be aware that the alteration will increase the expense.[2]

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[1] Reid *v.* Batte, M. and M. 413.

[2] Rex *v.* Peto, 1 Y. and Y. 37.

[3] Lines v. Rees, 1 Jur. 593.

[4] Hughes *v.* Lenny, 5 Mee. and W. 183.

[5] Robson *v.* Godfrey, Holt, 236; 1 Stark, 275.

In concluding the subject of extra works, it may be desirable to add that, in purchasing materials to be supplied from time to time as required during the progress of a building, it may sometimes be advisable to stipulate, in writing, with the dealer or manufacturer that the goods supplied shall be subject to the approval of the architect of the building; as otherwise, if inferior goods be supplied, or goods which do not conform to the specification of the works, they may be thrown on the builder's hands without his having any redress.

In a case which was recently before one of the County Courts, and which related to a claim for tiles which had been rejected by the architect, the Judge of the Court is reported to have said, that "directly the manufacturer receive notice that an architect had rejected his goods, it was his place to remove the materials complained of. If an architect unjustly decided, the tradesman had his remedy in law."[3] In that case the judgment doubtless went upon the particular facts of it; but it should be borne in mind, that the decision of a judge of an inferior Court does not carry with it the weight which attaches to a judgment of a superior Court, and this case is referred to merely as an illustration of the text.

IV.

PARTY WALLS AND INJURIES TO BUILDINGS.

THIS is a subject which has relation more to the rights of property than to the liabilities of those engaged in the building profession; but nevertheless, in a work of this kind, it is necessary that it should be noticed, as it is of great interest and importance. It is a subject of much difficulty to architects and builders; for the rights of adjoining owners to the support given by the joint or party-wall of their respective premises is often a matter of great doubt and uncertainty. The nature and extent of that right, and how far party-walls may be interfered with, without encroaching on the rights of adjoining proprietors, are questions which frequently arise in building operations. If the adjoining proprietor has a right to the support given to his premises by a party-wall, and damage accrue by reason of an adjoining house having been taken down, without the party-wall having been properly underpinned, he will have a right of action against the person causing the damage, either by himself or by his agents. The question to be determined in such a case is more a question of fact than of law. The extent of the injury, and the liability for it in damages, are questions which a jury would have to determine upon the evidence before them, which is most frequently conflicting and contradictory.

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[1] Thornton v. Place, 1 M. and R. 218.

[2] Lovelock v. King, 1 M. and R. 60.

[3] 17 Builder, 380.

Where a public nuisance exists, caused by a ruinous house in such a state as to occasion fear to the neighbours and the public, the occupier of the house is immediately liable to the public for the continuance of the nuisance.[1] There is, however, no obligation towards a neighbour cast by law on the owner of a house, merely as such, to keep it repaired in a substantial manner; his duty in such a case is merely to prevent it from becoming a nuisance to his neighbour. A declaration set forth that a certain messuage was in the occupation of the tenant of the plaintiff, who had the reversion; that the defendant was the proprietor of another messuage adjoining; and by reason thereof, as such owner and proprietor, ought to have repaired and kept in a substantial manner the messuage; and in an action for non-repair, it was pleaded that the messuages were contiguous and abutting on each other, and were divided by a party-wall, whereof the plaintiff was seised of an undivided moiety; that it was in a ruinous state, and being parcel of the messuage, had fallen on the first-mentioned messuage; and it was held that the declaration was bad.[2] An action on the case was brought by a reversioner of a house against the owner of the adjoining house, for pulling it down without shoring up the plaintiff's house, in consequence whereof it was impaired and in part fell down. The plaintiff being nonsuited, upon a rule obtained to set aside the nonsuit, it was held, first, that the plaintiff could not recover, on the ground of the defendant not having given notice that he was about to pull down his house, that not being alleged as the cause of the injury; secondly, that as the plaintiff had not alleged or proved any right to have his house supported by the defendant's house, he was bound to protect himself by shoring, and could not complain that the defendant had neglected to do it.[1] The facts upon which the plaintiff was nonsuited are important, and they are therefore here stated at length. It appeared on the trial, that the two houses were very old and decayed, the party-wall between them weak and defective; that for some time pieces of timber (struts) had been carried across Honey Lane, on the east side whereof defendant's house was situate, to the opposite house on the west side of the lane; that the plaintiff's house adjoined the defendant's eastward; that these struts, by preventing the defendant's house from falling westward, had the effect also of preventing the plaintiff's house from falling that way; that when defendant's house was taken down, these struts were necessarily removed, and no other and longer struts substituted, extending from the plaintiff's house on the opposite side of Honey Lane, nor any upright shores placed within the plaintiff's house to sustain the floors and roof without the aid of the party-wall: that if either of these measures had been adopted, the plaintiff's house might have stood; but that neither of them being adopted, it soon became separated from the house adjoining it on the east, and either partly fell, or was necessarily taken down, and rebuilt, being injured, dangerous, and uninhabitable. Moreover, it did not appear whether the two houses had been erected at the same time, or at different times; but from their construction, it seemed likely that they were built at or about the same time. The freehold was then in different hands, and it was also most probably the case that it was in different hands at the time the houses were built.

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[1] Rex *v.* Watts, 1 Salk. 357.

[2] Chauntler *v.* Robinson, 4 Exch. 163.

The following case is a further illustration. The plaintiff owned a house, adjoining which was the house of a third person, and adjoining this third person's house were two houses of the defendants. These four houses, for more than thirty years past, were all of them out of the perpendicular, leaning to the west. The defendants contracted to have their two houses, which were the most westward, pulled down, and others erected in their stead. The contractor accordingly pulled them down, and by so doing the plaintiff's house fell, doing considerable damage. Upon this state of facts, it was held that the plaintiff had not established his claim to a right of support for his house, and enjoyed as of right from the defendants through the medium of the plaintiff's house being supported by the intermediate house, which leaned upon the defendant's house.[2]

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[1] Payton *v.* Mayor, &c., of London, 9 B. and C. 725.

[2] Solomon *v.* the Vintners' Company. 33 L. T. 224.

In an action by one tenant in common of a party-wall against a builder employed by the other tenant for pulling it down carelessly and rebuilding it with unreasonable delay, special damage being laid, damage to fixtures, loss to business, &c., one count being as trespass, the other being grounded on a want of due care and diligence; the tacit assent of the plaintiff to the work being commenced was held to support a plea of leave and license as to the count for trespass; but that the plea was not applicable to the second count alleging delay and negligence in rebuilding the wall, supposing that the action was sustainable.[1]

It may be further observed that the mere circumstance of juxtaposition does not render it necessary for a person who pulls down his wall to give notice of his intention to the owner of an adjoining wall which rests upon it; and that he is not even liable for carelessly pulling down his wall if he had not notice of the existence of the adjoining wall, provided, however, the plaintiff has not a right to have his wall supported by that of the defendant.[2]

Where several houses belonging to the same owner are built together, so that each requires the mutual support of the neighbouring house, and the owner parts with one of the houses, the right to such mutual support is not thereby lost. The reason for this is, that the law presumes that the owner reserves to himself such right, and at the same time grants to the new owner an equal right; and, consequently, if the owner parts with several houses at different times, the possessors still enjoy the right to mutual support, the right being wholly independent of the question of the priority of their titles.[3]

An adjoining owner has no right to underpin a party-wall, either partially or wholly, unless he can do so without injury to the adjoining messuage. Whether or not the party who underpins the wall has a several interest in half of it, or is tenant-in-common with the other party of the whole wall, he is liable for the injury resulting from his mode of dealing with it.

The plaintiff, in his declaration, complained that he, being possessed of a certain dwelling-house, and the defendant being also possessed of a certain other dwelling-house next adjoining that of the plaintiff, the defendant proceeded to pull down his said house for the purpose of building another house on the site thereof; and that the defendant continuing, &c., by his workmen, &c., behaved and conducted himself so carelessly, negligently, and improperly in and about digging and clearing the ground for the foundation of the said house, on the site of the said first-mentioned house, and in and about underpinning the party-wall between that house and the said house of the plaintiff, &c., and by and through the carelessness, &c., of the defendant and his agents, the said party-wall, and all the walls, floors, beams, &c., of the said house of the plaintiff were greatly sunk, cracked, weakened and injured, &c. : this it was held disclosed a good cause of action against the defendant; for that the defendant had no right to underpin the party-wall, either partially or wholly, unless that could be done without injury to the plaintiff's house, even though it might be doubtful whether the interests of the parties were several, or whether they stood in the relation of tenants-in-common.[1]

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[1] Pfluger *v.* Hocken, 1 F. and F. N. P. 142.

[2] Chadwick *v.* Trower, 3 N. S. C. 334.

[3] Richards *v.* Rose, 9 Exch. 218.

Again, a person cannot be compelled to execute works under an agreement if the execution of those works will interfere with rights acquired by third parties. A motion for an injunction to restrain the rebuilding of a house until the whole eastern party-wall had been pulled down was made under the following circumstances:—The plaintiff was the ground landlord of the house in question, the defendants being his tenants, and a contract in writing was entered into between the parties to pull down the entire structure and rebuild it upon certain specified terms. The defendants having pulled down the building, with the exception of the eastern party-wall, gave notice, under the Metropolitan Building Act, to the adjoining owner on the east side, and an award was made under the Act, the district surveyor being umpire, and under that award they were proceeding to underpiece and patch, instead of entirely removing the party-wall in question. The plaintiff, contending that this was a breach of the contract, filed a bill for specific performance, and for an injunction to restrain the rebuilding until the whole eastern party-wall was pulled down. In delivering judgment, refusing the motion for an injunction, the Vice-Chancellor (Kindersley) said that it was unnecessary to determine the question whether a bill for specific performance would lie upon a building contract, although he had no doubt that such a case stood upon exactly the same footing as any other contract. On such a contract, he said, although the Court might not be able to compel a party to do an act, it might restrain him from doing it in any other mode than that contracted for. In the present case; the defendants not pretending that they were acting in accordance with the contract, the difficulty was that third parties were interested. The Act of Parliament had laid down certain rules, binding on all parties, and if proceedings had been taken by which those third parties (the adjoining owners) had acquired rights, could the Court affect a state of things in which they were deeply interested? The defendants desired to fulfil the contract; whether they had taken the proper steps for that purpose was another question. They gave notice to the adjoining owners that they intended to pull down and rebuild the party-wall, if, on a survey, it was so far defective as to make it necessary. It was said that the notice ought to have been imperative by the building owners that they would do it after a certain time. The clause of the Act with regard to such notice bore no such construction. Where, although a party-wall was sufficient to prevent fire, it was not sufficient for a structure the building owner meant to lay upon it, he might pull it down at his own expense; but where both parties were interested in its removal, each bore a portion of the cost. The building owner in the first case had a right on notice to pull down the party-wall, however inconvenient to the adjoining owner, who had also a right to challenge its necessity, and to appoint surveyors and an umpire to determine the question. The only appeal from such a proceeding was to the County Court, which alone had the power to deal with it, and, unless on appeal from the County Court, no Court could interfere any more than with a decree of the House of Lords. If there was a dispute about the thickness, there was the same right of arbitration. It was said that the award was bad because the district surveyor was umpire; but he was, in fact, the most proper person, unless he was otherwise interested, and here he was not. It was now asked that, after the award had settled everything, the defendants must pull down the wall. Assuming they were entirely wrong, and were acting in contravention of the agreement, still, when the plaintiff asked for an injunction, which might leave the adjoining owners with their rooms exposed to the sky, he was asking the Court to compel the defendants to do that which they were unable to do. It was the same as the case of a vendor who had burned his title-deed. That might be a very wicked act, but could the Court decree him to deliver it up, and commit him to prison if he did not?'[1]

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[1] Bradbee *v.* Christ's Hospital (Governors) 2 Dowl. (N. S.) 164; 2 Scott, N. R. 79, 4 Man. and G. 714.

The following bears on the same subject. A person had pulled down a party-wall, thereby destroying the internal decorations of his next neighbour's house, and rebuilt the wall without restoring or replacing the decorations. On a motion for a *mandamus* the

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[1] Seawell *v.* Webster, MS.

Court held that it was not competent for the person so injured to compel by *mandamus* the reinstatement of his apartments under the Building Act, 14 Geo. 3. c. 78, § 41, but that his remedy was by action against the person causing the injury.[1]

Of common right the owner of the surface of the soil is entitled to support for his buildings thereon from the adjacent strata; and therefore if the owner of minerals remove the strata, it is his duty to leave sufficient support for the surface in its natural state. But in 2 Rolls abr. 564, tit. *Trespass* I. pl. 1,[2] it is said, "If A, seised in fee of copyhold land next adjoining that of B, erect a new house on his land, and part of the house is erected on the confines of his land next adjoining the land of B, if B afterwards digs his land near to the foundations of the house of A, but not touching the land of A, whereby the foundation of the house and the house itself fell into the pit, still no action lies at the suit of A against B, because this was the fault of A himself that he built his house so near to the land of B; for he could not by his act hinder B from making the most profitable use of B's own land. But a man who has land next adjoining to my land cannot dig his land so near to my land that thereby my land shall fall into his pit; and for this, if an action were brought, it would lie." In a late case this doctrine was upheld; the reason given being that the plaintiff could not, by putting an additional weight upon his land, and so increasing the lateral pressure upon the defendant's land, render unlawful any operation in the defendant's land which before would have caused no damage.[3] Where, however, a house has been supported more than twenty years by land belonging to another proprietor with his knowledge, and he digs near the foundation of the house whereby it falls, he is liable to an action at the suit of the owner of the house.[4] But in a more recent case it was held that no cause of action accrued by the mere excavation by a defendant on his own land, so long as he caused no damage to the plaintiff; and that the cause of action accrued when the actual damage first occurred, from which time the statute of limitations began to run, and not from the time when the excavation was made.[5]

In Gale on *Easements*, p. 216, it is observed on this latter point, "If the neighbouring owners might excavate their soil on every

[1] Reg. *v.* Ponsford, 3 Dowl. (N. S.) 116; 12 L. J. 313; 7 Jur. 767.

[2] Humphries *v.* Brogden, 12 Q. B. 739.

[3] Wyatt *v.* Harrison, 3 B. and Ad. 871.

[4] Stansell *v.* Jollard, 1 Selw. N. P. 457; Hide *v.* Thornborough, 2 Carr. and Kir. 250; Partridge *v.* Scott, 3 Mee. and W. 220.

[5] Bonomi and Wife *v.* Backhouse, 33 L. T. 331.

side up to the boundary line to an indefinite depth, land thus deprived of support on all sides could not stand by its own coherence alone."

"This right to a lateral support from adjoining soil, is not," Lord Campbell, *C. J.*, in Humphries *v.* Brogden, observed, "like the support of one building upon another, supposed to be gained by grant, but is a right of property passing with the soil. If the owner of two adjoining closes conveys away one of them, the alienee, without any grant for that purpose, is entitled to the lateral support of the other close the very instant when the conveyance is executed, as much as after the expiration of twenty years or any longer period."

In Scotland, where a house is divided into different floors (flats) or stories, each floor belonging to a different owner, the proprietor of the ground-floor is bound merely by the nature and condition of his property, without any servitude or contract, not only to bear the weight of the upper story, but to repair his own property, in order that it may be capable of bearing that weight; and as the proprietor of the ground-story is obliged to uphold it for the support of the upper, the owner of the upper must uphold his story as a roof or cover to the lower.[1]

Where the owner of two or more adjoining houses sells and conveys one of them to a purchaser, such house is entitled to the benefit, and is subject to the burden, of all existing drains communicating with the other house, without any express reservation or grant for that purpose. Thus the plaintiff's and the defendant's houses adjoined each other; they having formerly been one house, and converted into two by the owner of the whole property. Subsequently the defendant's house was conveyed to him, and, after that, the plaintiff took a conveyance of his house. At the time of these conveyances, a drain ran under the plaintiff's house and then under the defendant's house, and discharged itself into the common sewer. Water from the eaves of the defendant's house fell on the plaintiff's house, and then ran into a drain on the plaintiff's premises, and then through the drain into the common sewer, through which the plaintiff's house was drained. On the trial of the action, a verdict was entered for the plaintiff, with leave to the defendant to move to enter a verdict for him; and it was held by the Court, that the plaintiff was, by implied grant, entitled to have the use of the drain as it was used at the time the defendant purchased his house.[2]

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[1] Erskine's Inst. book i. tit. 9, § 11.

[2] Pyer *v.* Carter, 1 H. and N. 916.

V.

ARBITRATIONS.

THE law with regard to submissions to arbitration is too extensive a subject to be exhausted within the limits of this work; and, indeed, it would answer no useful purpose to attempt to do so, as the subject is more appropriately treated of at length in the works of practice intended for the special use of the legal profession. So far, however, as lay arbitrators and laymen are concerned, the more salient points of the law of arbitrations will be found in the following pages; the object of the author has been to set before his readers the landmarks by which they must be guided in matters of this sort.

1. *The Submission.*

Merchants, traders, and others, desiring to end any controversy, suit, or quarrel, for which there is no other remedy but by personal action or suit in Equity, may, by arbitration, agree that the submission of their suit to the award or umpirage of any person shall be made a rule of any Court of Record which the parties shall choose, and insert their agreement in the submission or the condition of the bond or promise whereby they oblige themselves to submit to the award or umpirage of any person or persons; which may, on affidavit of the witnesses thereto, or any one of them, be made a rule of Court and enforced by the usual means.[1] The act puts submissions to arbitration, where no cause was depending, upon the same footing as where there was a cause depending, and was only declaratory of what the law was in the latter cases previous to its passing.[2] The submission so made is not revocable without leave of the Court; and the arbitrator or umpire is to proceed with the reference notwithstanding revocation by the parties, and make his award, although the person making the revocation shall not afterwards attend the reference; and the Court, or a judge thereof, may, from time to time, enlarge the time for making the award.[3]

The subject of submissions to arbitration is now, however, chiefly regulated by the Common Law Procedure Act, 1854.[4] By that Act every agreement or submission to arbitration by consent, whether by deed, or instrument in writing not under seal, may be made a rule of any one of the superior Courts of Law or Equity, on the application of any party thereto, unless the agreement or submission contain words purporting that it is intended that it should not be made a rule of Court.[1] When the reference is or is intended to be to two arbitrators, one appointed by each party, either party in the case of the death, refusal to act, or incapacity of any arbitrator appointed by him, may substitute a new arbitrator, unless the document authorizing the reference show that it was intended that the vacancy should not be filled up. If one party fail to appoint an arbitrator, either originally or by way of substitute, for seven clear days after the other party has appointed one, and has served the party failing to appoint with a written notice to make the appointment, the party who has appointed an arbitrator may appoint him to act as sole arbitrator in the reference; and an award made by him will be as binding as if the appointment had been by consent. The Court or judge may, however, revoke the appointment on such terms as may appear just.[2]

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[1] 9 and 10 W. 3. c. 15.

[2] Lucas *v.* Wilson, 2 Burr. 701.

[3] 3 and 4 W. 4. c. 42, § 39.

[4] 17 and 18 Vict. c. 125.

If the reference be to a single arbitrator, and all the parties do not concur in the appointment; or if the person appointed refuse to act, become incapable, or die, and it was not intended that the vacancy should not be supplied, and the parties do not concur in appointing a new one; or if where the parties or two arbitrators are at liberty to appoint an umpire or third arbitrator, and do not; or if any appointed umpire or third arbitrator refuse to act, become incapable, or die, and it was not intended that the vacancy should not be supplied, and the parties or arbitrators do not appoint a new one: in every such instance any party to the submission may serve the remaining parties, or the arbitrators, as the case may be, with a written notice to appoint an arbitrator, or umpire, or third arbitrator; and if within seven days thereafter no appointment be made, any judge of any superior Court of Law or Equity, upon summons, may make the appointment; and the person so appointed shall have the like power to act in the reference, and make an award, as if he had been appointed by consent of all parties.[3] Formerly an agreement to refer was no bar to an action; but now, if after a reference to arbitration, an action or suit in Equity be commenced, the defendant may apply to the Court for, and the Court, after appearance and before plea or answer, on being satisfied that no sufficient reason exists why the matters in dispute cannot be or ought not to be referred to arbitration, according to the agreement, and that the defendant was at the time of the bringing the action or suit, and still is, ready and willing to join and concur in all acts necessary and proper for causing them to be decided by arbitration, may make a rule or order staying all proceedings, on such terms, as to costs or otherwise, as to the Court or judge may seem fit; and the rule or order may afterwards be discharged or varied as justice may require.[1]

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[1] 17 and 18 Vict. c. 125, § 17.

[2] Ib. § 13.

[3] Ib. § 12.

The section contemplates a completed deed of submission; therefore, where several persons agreed to refer matters in dispute to an arbitrator, and that a formal submission should be drawn up to be signed by themselves and another party, and that party refused to sign, the Court refused to stay an action commenced by one of the parties to the agreement against another; the agreement which was come to for a formal submission not being within the section, and the formal submission not having been executed: *semble,* the 17 & 18 Vict. c. 125, § 11, is not confined to the case of a deed or instrument in writing, in which there is a stipulation of the parties to it to refer differences to arbitration.[2]

Where an action is brought, and it is made to appear to a Court or judge that the matter in dispute consists wholly or in part of matters of mere amount, which cannot be conveniently tried in the ordinary way, the Court or judge may decide the matter in a summary manner; or order that it be referred, either wholly or in part, to an arbitrator appointed by the parties, or to an officer of the Court, or in country causes to the Judge of any County Court, upon such terms as to costs and otherwise as the Court or judge shall think reasonable; and the decision of the Court or judge, or the award or certificate of the referee shall be enforceable, by the same process as the finding of a jury on the matter referred.[3] If in such a case it appear to the Court or judge that the allowance or disallowance of any particular item or items in the amount depends upon a question of law or fact, the Court or judge may direct a case to be stated, or an issue or issues to be tried; and the decision of the Court or finding of the jury is to be taken and acted upon by the arbitrators as conclusive.[4] Also, if upon the trial of any issue of fact by a judge, it appear to him that the questions arising thereon involve matters of account which cannot conveniently be tried before him, he may, at his discretion, order that the matter of account be referred to an arbitrator appointed by the parties, to an officer of the Court, or, in country cases, to a County Court Judge, upon such terms as to costs and otherwise as he may think reasonable; and the award or certificate of the referee shall have the same effect as the award or certificate of a referee before trial.[1] With reference to the above provisions, it is necessary to observe that the Court of Chancery has the same jurisdiction over arbitrators and awards, under the Common Law Procedure Act, 1854, as the Courts of Common Law have.[2]

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[1] 17 and 18 Vict. c. 125, § 11.

[2] Mason *v.* Hadden, 33 L. T. 163.

[3] 17 and 18 Vict. c. 125, § 3.

[4] Ib. § 4.

It is a principle of law that parties cannot by contract oust the Courts of their jurisdiction; and a covenant in an arbitration agreement to that effect is absolutely void;[3] thus, it has been held that an action lay on a contract containing a prospective agreement, that if any difficulties arose it should be referred, where one of the parties to the contract refused a reference.[4] Nevertheless, persons may covenant that no right of action shall accrue till a third person has decided in a difference that may arise between the contracting parties;[5] and where there is an agreement to refer a question of account due for work to an engineer, and to exclude the jurisdiction of the ordinary tribunals till an award shall be made by him, it will be valid;[6] for if a contract provides for the determination of the contractor's claims and liabilities by the judgment of a particular person, everything depends upon that person's decision, and until he has spoken, no right arises which can be enforced either at law or Equity. Clauses which are derogatory to the powers possessed by arbitrators under the general law, should not, however, be introduced into submissions to arbitration. Thus, if in a cause referred to arbitration, the submission contain a clause that "the witnesses of each party respectively shall be sworn before a Judge of a Superior Court, or a Commission thereof," the arbitrator is notwithstanding entitled to swear the witnesses himself, if he think proper to do so; as these words are merely cumulative, and do not take away the power vested in him by the 3 & 4 Wm. 4. c. 42, § 41.[7]

An action by an engineer for professional services, the claim depending partly upon his right to commission and partly on the propriety of charges for work done, the items of which were numerous, the judge ordered to be referred to arbitration as a matter of account, consenting to try the question with regard to the right to commission as a question of fact.[1] It has also been held that an action for dilapidations where money is paid into Court, and the question is only as to the amount of the dilapidations, may be a matter of account, and the subject of a compulsory reference under the 17 and 18 Vict. c. 125, § 3.[2]

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[1] 17 and 18 Vict. c. 125, § 6.

[2] *In re* Aitken 3 Jur. (N. S.) 1296.

[3] Mexborough *v.* Bower, 7 Bea. 127; Scott *v.* Liverpool Corporation, 5 Jur. (N. S.) 105; 28 L. J. (N. S.) Ch. 230; Horton *v.* Sayer, 33 L. T. 287.

[4] Livingston *v.* Ralli, 5 El. and Bl. 132; 24 L. J. Q. B. 269: 1 Jur. (N. S.) 591. See also Thompson *v.* Chadwick, 8 T. R. 139.

[5] Scott *v.* Avery (in error), 5 H. L. Cas. 611; 25 L. J. Exch. 303; 2 Jur. (N. S.) 815.

[6] Scott *v.* Liverpool Corporation, 27 L. J. Ch. 641; 28 L. J. Ch. 230; 4 Jur. (N. S.) 402.

[7] Hodson *v.* Wilde, 2 Jur. 992.

If a contract be so framed that the fulfilment of one part of it be left to be determined by arbitration; as a contract for the sale of a house and certain fixtures to be taken at a valuation to be made by persons mutually chosen, or an umpire; a Court of Equity cannot decree a specific performance of the conditions of the contract when the arbitration has not been had recourse to in the first instance.[3]

Finally, it should be borne in mind, that the fact of one of the parties to a reference having become a bankrupt is no revocation of a submission to arbitration.[4] Moreover, an arbitrator's authority is not revoked by the death of one of the parties to the submission if the order of reference contains a provision that he shall make and publish his award by a certain day specified, ready to be delivered to the parties, or, if either of them should be dead, to their respective personal representatives.[5]

2. *Witnesses.*

The Court, by which the rule or order shall be made, or which shall be mentioned in the submission, or any judge, by rule or order, may command the attendance and examination of any person to be named, or the production of any documents to be mentioned in the rule or order; and disobedience shall be deemed a contempt, if, in addition to the service of the rule or order, an appointment of the time and place of attendance signed by one at least of the arbitrators, or by the umpire before whom the attendance is required, shall also be served either together with or after the service of the rule or order. The witnesses, however, are to be entitled to the like conduct money and payment of expenses, and for loss of time, as for and upon attendance at any trial. The application for the rule or order must set forth the county where the witness is residing at the time, or satisfy the Court or judge that the person cannot be found. It is further provided, that no person shall be compelled to produce any writing or other document that he would not be compelled to produce at a trial, or to attend more than two consecutive days, to be named in the order.[1]

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[1] Murray *v.* Sunderland Dock Company, 1 F. and F. 179.

[2] Cummings *v.* Birkett, 3 H. and N. 156; 27 L. J. Exch. 216; 4 Jur. (N. S.) 242.

[3] Darbey *v.* Whitaker, 4 Drew. 134.

[4] Hemsworth *v.* Brian, 1 C. B. 131; 2 Dowl. and L. 844; 14 L. J. C. P. 134.

[5] Wrightson *v.* Bywater, 6 Dowl. P. C. 359; 3 Mee. and W. 199.

When it is ordered or agreed in any rule or order of reference, or submission containing an agreement to make it a rule of Court, that the witnesses shall be examined upon oath, the arbitrator or umpire, or any one arbitrator, may and are required to administer an oath to such witnesses or to take their affirmation in cases where affirmation is allowed by law instead of oath; and perjury may be assigned on such oath or affirmation.[2] By the subsequent Act to amend the law of evidence, every arbitrator having by law or consent of parties authority to receive evidence, may administer an oath to the witnesses.[3] In taking evidence, arbitrators are bound by those rules of evidence which govern the Courts of Law;[4] but the award will not be set aside on the ground of the witnesses not having been examined on oath, if no such objection was made at the time of their examination.[5] The refusal of an arbitrator to examine witnesses is however sufficient misconduct on his part to induce the Court to set aside his award, even though he may think that he has sufficient evidence without them.[6] If the arbitration relate to a matter in which value is in question, the arbitrator should look narrowly into evidence of value which may be tendered; for, it is said, little reliance is to be placed on the evidence of surveyors in a contest as to value.[7] It has however been held that a surveyor is a competent witness in the matter of a building lease; and therefore that a lessee who has had the advice and assistance of a competent surveyor cannot complain of surprise.[8]

Where a cause is referred to arbitration with power to the arbitrator to settle all matters in difference between the parties, the submission providing also that the parties respectively are to be examined on oath, if thought necessary by him, it is in the discretion of the arbitrator to examine the parties, each in support of his own cause, if he think fit so to do.[9] If the submission be "so that the witnesses be examined on oath," affidavits cannot be read; and if they are, the award may be set aside.[1]

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[1] 3 and 4 W. 4. c. 42, § 40.

[2] Ib. § 41.

[3] 14 and 15 Vict. c. 99, § 16.

[4] Attorney-General *v.* Davison, McClel. and G. 160.

[5] Ridout *v.* Pye, 1 B. and P. 91.

[6] Phipps *v.* Ingram, 3 Dowl. P. C. 669.

[7] Waters *v.* Thorn, 22 Beav. 547.

[8] Haberdashers' Company *v.* Isaac, 3 Jur. (N. S.) 611, V. C. W.

[9] Wells *v.* Benskin, 9 Mee. and W. 45; 1 Dowl. (N. S.) 343.

3. *The Arbitrators—their Powers and Duties.*

The proceedings upon an arbitration, unless otherwise directed, must be conducted in like manner, and subject to the same rules and enactments as to the power of the arbitrator and of the Court, the attendance of witnesses, the production of documents, enforcing or setting aside the award or otherwise, as upon a reference made by consent under a rule of Court or judge's order.[2]

The mode of conducting the arbitration must be left to the arbitrators, subject always to the liability of their award to be set aside if they conduct it illegally. In conducting the arbitration, however, they must act impartially, and not consider themselves agents for the persons by whom they were respectively appointed.[3] It should be observed also, that there is no distinction with regard to legal and other arbitrators; and that the Court will not examine an award because it has been made by one who is not in the profession of the law.[4]

An arbitrator's power is determined by the death of the parties to the submission, or any one of them at any time before the award;[5] but it is best in entering into the submission to stipulate that the reference shall not be defeated by the death of one of the parties before award made,[6] for in that case the death of either of the submitting parties will not determine the authority of the arbitrator, or vacate the subsequent proceedings upon the reference;[7] so also where the reference is ordered by a Court of Equity or under a rule of Court.[8] Where the submission is by deed, an arbitrator may, with the assent of both parties, be substituted in the place of one of the original arbitrators.[9]

In matters submitted to arbitration, it is of the greatest importance that the arbitrators should act within the powers given to them by the submission, as if they do not, the whole of the proceedings may be set aside. They should also take care that their award is not open to exception on the ground of uncertainty ; and that no part of their finding is bad, for if it be, the whole of the award may be set aside. Thus in an arbitration the arbitrator recited that, among other matters in difference, it was referred to him to say whether certain grates, &c., were part of the demised premises; and further, to order what should be done to make a final determination of such matters in difference. He awarded certain damages to the plaintiff on the issues in the declaration, and found that the grates, &c., were part of the demise of the defendant to the plaintiff, and that they were removed and carried away by the defendant and applied to his own use, and that they were of the value of 11*l.* 5*s.*; and he ordered the plaintiff to fix and set up other grates, &c., in the place and stead of such as were removed, and to leave them to and for the use of the defendant at the end of the term, and that the defendant should pay the plaintiff the sum of 11*l.* 5*s.* The defendant by affidavit denied that power was given to the arbitrator to order what should be done by the parties as to the grates; and it was held that the award was bad, as the arbitrator had exceeded his powers, and that the award itself was uncertain in not specifying the quality and price of the grates, &c., to be set up; and also, that as the matter in difference as to the grates was one of the matters submitted to the arbitrator, the finding on that being bad, the whole award must be set aside.[1]

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[1] Banks *v.* Banks, 1 Gale, 46.

[2] 17 and 18 Vict. c. 125, § 7.

[3] Calcraft *v.* Roebuck, 1 Ves. J. 226.

[4] Jupp *v.* Grayson, 3 Dowl. P. C. 199; 1 C. M. and R. 523.

[5] Edmunds *v.* Cox, 2 Chit. 432; 3 Doug. 406; Cooper *v.* Johnson, 2 B. and Ald. 394; 1 Chit. 387; Potts *v.* Ward, 1 Mars. 366.

[6] Toussaint *v.* Hartop, 7 Taunt. 571.

[7] Macdougal *v.* Robertson (in error), 2 G. and J. 11; 1 M. and P. 147; 4 Bing. 435.

[8] Dowse *v.* Cox, 10 Moore, 272; 2 Bing. 20; Clarke *v.* Crofts, 4 Bing. 143; 12 Moore, 349.

[9] *In re* Tunno, 5 B. and Ad. 488; 2 Nev. and M. 328.

An arbitrator greatly errs if, in the minutest particular, he takes upon himself to listen to evidence behind the back of any of the parties to the submission ;[2] and where an arbitrator questions a witness, and receives statements from him in the absence and without the consent of one party to the reference, the Court will set the award aside, without taking into consideration the nature of the statements, or the probability of their having influenced the decision.[3] The Court will also set aside an award on the ground of interviews having taken place between the arbitrator and one party in the absence of the other ; and similar misconduct on the part of the person applying will not prevent the Court setting aside the award, for the matter concerns the true administration of justice.[4] But it was held by the House of Lords that it is no objection to an award that the arbitrator, in the absence of one of

[1] Price *v.* Popkin, 2 Per. and Dav. 304; 3 Jur. 433.

[2] Drew *v.* Leburn, 2 Mac. H. L. Cas. 1.

[3] Reg. *v.* Dobson ; S. P. Dobson *v.* Groves, 6 Q. B. 637.

[4] Harvey *v.* Skelton, 7 Bea. 455.

the parties, called in the other and asked him merely whether he admitted or disputed certain items in an account.[1] The arbitrators must be perfectly unbiassed in their judgment as to the matter referred to them; *i.e.*, they must have no direct personal interest in the matter, however remote. It is sufficient for the interference of a Court of Equity if any circumstance is shown which is calculated to produce a bias in the judgment of an arbitrator. Therefore, where the guarantee by an architect, who was also the arbitrator, that the expense of a certain building should not exceed a certain sum, was unknown to the plaintiffs, it was held that they were not bound by their contract to submit in all things to his determination.[2]

Upon a reference, the arbitrator should be careful not to admit a party in the cause as a witness, unless a specific power so to do be given to him; for if he do so, the award may be set aside. Thus the parties to an order of reference mutually agreed to strike out the usual clause giving the arbitrator power to examine the parties. At the hearing, the plaintiff's attorney tendered the plaintiff as a witness, and he was examined by the arbitrator. The defendant's counsel objected to the admission of the plaintiff; but as the arbitrator decided against him, he proceeded to cross-examine the plaintiff, and went into his case. On a motion to set aside the award for irregularity, it was held that the examining of the plaintiff under the circumstances was a good ground for setting aside the award, and that the objection was not waived by the defendant's going on with the arbitration under the circumstances. But *semble*, if the defendant had tendered himself as a witness to support his own case, that would have been a waiver.[3]

Arbitrators may under certain circumstances reject evidence tendered to them on a reference: thus, when under an order of reference the parties had submitted their accounts to the arbitrators, and a report had been made and a meeting fixed to close the accounts, one of the parties at the meeting tendered in evidence fresh documents which he had discovered relating to the accounts, and the arbitrators after looking at them declined to go into them; it was held that this was not misconduct affecting the validity of the award, but a rejection of evidence within the authority of the arbitrators.[4] Again, where an arbitrator has made an appointment, and one of the parties, although under the mistaken notion that there will be notice of another meeting before an award is made, goes away without tendering evidence, or intimating that he intends to offer it, the arbitrator may proceed *ex parte*, and without further notice make an award.[1]

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[1] Anderson *v.* Wallace, 3 Cl. and Fin. 26.

[2] Kemp *v.* Rose, 4 Jur. (N. S.) 919; 32 L. T. 51.

[3] Smith *v.* Sparrow, 1 Dowl. and L. 604; 1 B. C. 340; 16 L. J. Q. B. 139; 11 Jur. 126.

[4] *In re* March, 16 L. J. Q. B. 330.

In referring a matter to arbitration it is necessary that it should be borne in mind that, as before observed, the law recognises no distinction between professional and non-professional arbitrators; so that if a case be referred to a non-professional arbitrator, and he make a mistake in law, the parties to the reference are as much bound by the award as if the arbitrator belonged to the former class. Where parties refer matters to an arbitrator, whether he be a professional (*i.e.*, legal) man or not, they must be considered as having referred both the case and all matters of law arising upon it, and must take the consequence of any mistake either in law or upon the facts. Whether the question disputed before the arbitrators, be one of law or fact, is altogether immaterial, and the parties are in every case equally bound by his decision upon it.[2]

4. *Umpirage.*

If a reference be to two arbitrators, and the terms of the reference do not show that it was intended that there should be an umpire, or provide otherwise for the appointment of an umpire, the two arbitrators may appoint an umpire at any time within the period during which they have power to make their award, unless they be called upon by the terms of the reference to make the appointment sooner.[3] In any case where an umpire shall have been appointed, it shall be lawful for him to enter on the reference in lieu of the arbitrators, if they shall have allowed their time, or their extended time, to expire without making an award, or shall have delivered to any party or to the umpire a notice in writing stating that they cannot agree.[4]

The appointment of an umpire in a submission to arbitration is a judicial act, and must therefore be made or signed by the arbitrators at the same time, or in each other's presence; for if it be not, the Court will not issue an attachment for non-performance of the award of the umpire.[5] With regard to the appointment of an umpire, it is said that it may be made by lot if the parties to the reference assent to such a mode of election.[1] But the assent of the parties to the umpire chosen does not make the election good, unless they know the mode in which the umpire was chosen, and all the circumstances relating to his election.[2] Their assent will sufficiently appear by each presenting three names from which that of the umpire is to be drawn; or by signing the memorandum by which the person whose name is drawn is appointed umpire.[3] Again, where the appointment of an umpire by lot was consented to by the attorneys' clerk, and not by the attorneys themselves or their client, the appointment was held bad, although the parties in ignorance of the mode of appointment had attended the arbitrator.[4] So where arbitrators decided the choice of an umpire by tossing up, the acquiescence of parties subsequently to the choice and before the reference is proceeded in, does not render the appointment valid, unless the parties acquiescing have knowledge of the circumstance under which the choice was made.[5] If the reference be to three arbitrators, or any two of them, and two of them without consulting the third, and in his absence make the award, the award so made cannot be supported.[6] Moreover, the two who execute the award must do so at the same time and place and in the presence of each other, otherwise it is not what was stipulated for—viz., the joint judgment of the two; it must also be signed and published by the arbitrators at the same place.[7]

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[1] Harding *v.* Watts, 15 East, 556; Tryer *v.* Shaw, 27 L. J. Exch. 320.

[2] Ashton *v.* Pointer, 2 Dowl. 651; Young *v.* Walter, 9 Ves. Jur. 364; Ching *v.* Ching, 6 Ib. 282; Henty *v.* Rally, 4 Jur. 1091.

[3] 17 and 18 Vict. c. 125, § 14.

[4] Ib. § 15.

[5] Lord *v.* Lord, 5 El. and Bl. 404; 26 L. J. Q. B. 34; 1. Jur. (N. S.) 893.

Arbitrators, having power to choose an umpire, may elect one before they enter upon the examination of the matter referred to them.[8] If, however, they appoint an umpire by lot, they will vitiate their award, even though the appointment be assented to by the attorney's clerk, who conducts the arbitration on behalf of the party seeking to set aside the award, if the assent be given without the knowledge of the party or his attorney.[9]

Where arbitrators have a special power to choose an umpire, they must refer the whole matter to him, and the submission of a particular point only of the matter in dispute will be bad. Thus where the arbitration bonds were conditioned for the performance of the award of the arbitrators, or of the umpirage of such persons as the arbitrators should jointly choose between the parties, and the arbitrators agreed upon several matters, but not being able to agree upon one point, they referred that point to an umpire, the award was held to be bad, as the umpire should have gone into the whole case, and the arbitrators had in effect chosen an umpire between *themselves*, and not between the parties to the submission.[1]

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[1] *In re* Tunno, 5 B. and Ad. 488; 2 Nev. and M. 328; Taylor *v.* Backhouse, 2 Prac. Rep. 70; 20 L. J. Q. B. 233; 15 Jur. 86.

[2] *In re* Greenwood, 1 Per. and D. 463.

[3] *In re* Tunno, 5 B. and Ad. 488; 2 Nev. and M. 328.

[4] *In re* Hodson, 7 Dowl. P. C. 569.

[5] *In re* Jamieson, 4 A. and E. 945.

[6] *In re* Beck, 1 C. B. (N. S.) 695.

[7] Preston *v.* Ayre, 15 C. B. 724; Wade *v.* Dowling, 2 El. and Bl. 44; 23 L. J. Q. B. 302; 18 Jur. 728.

[8] Roe and Wood *v.* Doe, 2 T. R. 644.

[9] Hodson *v.* Drewry, 2 Jur. 1088.

5. *The Award.*

The arbitrator is to make his award under his hand, and, unless the time be otherwise limited, within three months after he shall have been appointed, and shall have entered on the reference, or shall have been called upon to act by a notice in writing from any party. The time may, however, be enlarged by consent of the parties, or by order of Court; and if no period be stated for the enlargement in the consent or order, it shall be deemed to be an enlargement for one month.[2] An umpire is entitled to enter on the reference in lieu of the arbitrators, when they shall have allowed their time to expire without making an award, or shall have delivered a notice, in writing, stating that they cannot agree.[3]

Upon any compulsory reference, or a reference by consent, where the submission is or may be made a rule or order of Court, the arbitrator may, if it be not provided to the contrary, state his award as to the whole or any part of it in the form of a special case for the opinion of the Court; and when an action is referred, judgment, if so ordered, may be entered according to the opinion of the Court.[4] The Court or judge may also remit the matters referred or any or either of them, to the reconsideration and redetermination of the arbitrator, upon such terms as to costs and otherwise as to the Court or judge may seem proper.[5] When, however, an award is remitted back to the arbitrator under the 17 & 18 Vict. c. 125, § 8, only to set it right on the face of it, the arbitrator is not bound to rehear the parties.[6]

No precise form of words is necessary to constitute an award; for it is sufficient if the arbitrator expresses by it a decision upon the matter submitted to him. And where a cause is referred, it is not necessary that the arbitrator should find for the plaintiff or defendant in the very words of the issue. It is sufficient if he decide substantially the question in dispute.[1]

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[1] Tollit *v.* Saunders, 9 Prid. 612; Bradford *v.* Bryan, Willes, 268; 7 Mod. 349.

[2] 17 and 18 Vict. c. 125, § 15. [3] Ib. [4] Ib. § 5.

[5] 17 and 18 Vict. c. 125, § 8. [6] Morris' Arbitration, 6 El. and Bl. 383.

An award drawn up in the form of an opinion has been held sufficient,[2] and it will be good though it be drawn up by the solicitor of one of the parties.[3] It must be certain and conclusive; but *primâ facie* uncertainty will not vitiate it, if it be capable of being rendered certain or conclusive, and it may be good or bad according to the event.[4] Moreover, if the terms of an award be clear on the face of it, the Court will not admit of an affidavit of one of the arbitrators to explain their intention.[5] Again, it may be good in part and bad in part where the subject is clearly capable of being separated;[6] but not so where all the matters are within the submission, and the award is upon the face of it entire.[7] Again, if the arbitrator exceed his authority, the direction as to the excess may be rejected as a nullity, forming no part of, and consequently not affecting, the award.[8] An award only affects those who are parties to it; therefore the award of an arbitrator as between a master and his workmen, will not bind another workman who came into the employ of a master after the award, and raised in reference to himself the same question which it decided.[9]

An award is final between the parties, unless the objection is apparent on the face of it;[10] and no objection can be taken on the ground of a mistake in point of law, unless the grounds of the objection appear on the award, or in some authentic shape before the Court in which it is questioned;[11] nor will a mere statement of facts from which it may be inferred that the award was founded upon an incorrect notion of the law of the case avail.[12] If, however, the award be contrary to law, it may be impeached; for it would be an excess of power on the part of the arbitrator;[13] but not unless the law upon the subject of the award be clear.[14]

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[1] Wykes and Shipton, 3 Nev. and M. 240.

[2] Matson *v.* Trower, R. and M. 17.

[3] Fetherstone *v.* Cooper, 9 Ves. Jur. 67.

[4] Aitcheson *v.* Cargey (in error), 9 Moore, 381; 2 Bing. 199.

[5] Gordon *v.* Mitchell, 3 Moore 241.

[6] Addison *v.* Gray, 2 Wils. 293.

[7] Auriol *v.* Smith, 1 T. and R. 128.

[8] Aitcheson *v.* Cargey (in error), 9 Moore 381, 2 Bing. 199.

[9] Hill *v.* Levey, 28 L. J. (N. S.) Exch. 80.

[10] Sharman *v.* Bell, 5 M. and S. 504.

[11] Price *v.* Jones, 2 Y. and J. 114.

[12] Delver *v.* Barnes, 1 Taunt. 48.

[13] Morgan *v.* Mather, 2 Ves. Jur. 15.

[14] Richardson *v.* Nourse, 3 B. and A. 237.

Where the parties appoint a lawyer their arbitrator, they appoint him judge of law as well as of fact; the Court therefore refused to set aside the award of a barrister on the ground that he had admitted an incompetent witness.[1]

An arbitrator, it would seem, is bound to find either in the affirmative or the negative, and where he does not, but has no objection to re-consider the matter, the Court will under special circumstances refer the matter back to him to investigate more fully, and to hear new evidence.[2] It must be borne in mind, however, that the decision of an arbitrator, whether a lawyer or a layman, is binding on the parties both in matters of law and in matters of fact, unless there has been fraud or corruption on his part, or there has been some mistake of law apparent on the face of the award, or of some paper accompanying and forming part of the award;[3] where, therefore, a verdict was taken for the plaintiff subject to the award of an arbitrator as to the amount of damages, and his award included an amount of damages which (it was assumed) the plaintiff was not legally entitled to in the action, the Court refused to interfere. Again, the award is conclusive as to the amount of damages, unless the award itself can be impeached.[4]

The award must be final, sufficiently certain, and not inconsistent. The following statement of an award in the matter of a business carried on by two persons as builders and excavators which had been dissolved by mutual consent, was held to have complied with those requisites,—that the defendant should pay to the plaintiff the sum of 223*l.* 4*s.* 6*d.*, in full of all demands in respect of his one equal moiety, half part, or share of the co-partnership property, estate and effects; and that upon payment thereof, and upon having such conveyances as thereinafter mentioned tendered to him for execution, the plaintiff should, at the defendant's request, execute a proper conveyance unto and to the use of the defendant, of, in, and to certain messuages, &c. therein mentioned, subject to certain mortgage debts charged thereon; that the debts then due and owing to and from the co-partnership concern should be received and paid by the defendant and the plaintiff in equal proportions; and that if either party should advance or pay any sum or sums of money over and above his half share or proportion of the co-partnership debts, then the amount so overpaid should, on demand, be made good and repaid to the party paying the same by the party making default.[1] It was, however, in that case doubted whether upon the supposition that there had been no arrangement between the partners by which the premises were ultimately to become the property of one partner, subject to the mortgages, the arbitrators did not exceed their authority in awarding the messuages, &c. to one of the parties, and not dividing them between both.

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[1] Perryman *v.* Steggall, 3 M. and S. 93; 9 Bing. 679.

[2] Fergusson *v.* Norman, 1 Jur. 797.

[3] Hodgkinson *v.* Fernie, 3 C. B. (N. S.) 189; 27 L. J. C. P. 66.

[4] Whitehead *v.* Tattersall, 1 Ad. and Ellis, 491.

In a cause referred to a barrister, he was empowered to direct "that a nonsuit or a verdict for the plaintiff or the defendants should be entered as he should think proper," and who was at the request of either party to state any point of law upon the face of his award for the opinion of the Court; and it was held that it was not incumbent on the arbitrator to decide finally as to the amount of damages to be recovered, and to direct how the judgment should be entered up; but that having by his award disposed of all the issues joined on the record, and assessed damages separately in respect of each subject matter of complaint stated in the declaration, and having referred to the Court the question as to the right of the plaintiff to recover damages in respect of some of the grievances stated in the declaration, at the request of the defendants and at the request of the plaintiffs, the question of the validity of a custom which was claimed, and other matters, he had properly discharged his duty, and that he was not bound definitively to determine as to the validity of the custom.[2]

If the submission in a reference be to two arbitrators, and a third to be named by them, the non-attendance of the third at the meetings (owing to his having been erroneously treated as an umpire throughout the whole of the proceedings), and the want of notice to him, will not be a ground for setting aside the award of the two arbitrators first appointed.[3] Then if "all or any of the matters in difference between the parties" are referred to arbitrators who disagree, but only as to the costs, the umpire must adjudicate on the whole question.[4]

Again, if a reference be made to two persons and to a third whom they are to appoint, and the award is to be made by a majority of them, and if, after hearing all the evidence, they differ as to making the award, and subsequent to the last meeting two of them make an award without consulting with the third; the award is bad and will be set aside.[1] So where an umpire refuses an express request either to rehear evidence already given before arbitrators, or to examine new witnesses, the Court will set aside the award;[2] and the not insisting on this objection at the time of making the award does not amount to a waiver of it. An umpire may make his award on the notes of the arbitrators if no objection be taken to his doing so. Where, however, the arbitrators disagree after hearing the witnesses, the umpire must re-hear the witnesses; and if he omits to do so and makes his award on the evidence taken down by the arbitrators, the award will be set aside. The objecting to such proceedings by the umpire may, however, be waived; but clear proof of the waiver must be given to prevent the award being set aside.[3] But in a previous case the Court refused to set aside the award of an umpire who received the evidence from the arbitrators without examining the witnesses; he not having been required to re-examine them before making his award.[4] Moreover, the umpirage will not be bad, though the arbitrators, who did not agree in their award, join in it;[5] and this even though the arbitrators are *functi officio,* and though a stranger join in it.[6] Neither would it be a valid objection to an award the fact that the arbitrators and the umpire sat and heard the evidence, and that then the latter made the award pursuant to the terms of the submission.[7]

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[1] Wood *v*. Wilson, 2 C. M. and R. 241.

[2] Bradbee *v*. Mayor, &c., of London, 4 Man. and Gr. 714.

[3] *In re* Marsh or Haywood *v*. Marsh, 16 L. J. Q. B. 330; 11 Jur. 657.

[4] Wicks *v*. Cox, 11 Jur. 542.

An arbitrator is not bound to make his award on each issue specifically if his intention as to each of them is sufficiently clear from the general language of the award.[8] It will suffice if he find on the whole for one party or the other.[9]

By an order of reference the Court had power, on the validity of an award being disputed, to remit the matters referred to the reconsideration of the arbitrators. An award having been made and containing a defect, the attorneys agreed verbally that the arbitrator should amend it, subsequently to which the defendant's attorney obtained a judge's order, that the matters referred should be remitted to the arbitrator for his re-consideration. Upon such re-consideration he altered the award without giving notice to either party of his intention so to do; neither party requested him to hear fresh evidence, and he *did not* recite the judge's order in the amended award. On a motion to set aside the award, it was held that the arbitrator was not bound to give notice to the parties, or to recite the judge's order in his amended award.[1]

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[1] *In re* Templeman, 6 Jur. 324.

[2] Jenkins *v.* Legg, 1 Dowl. (N. S.) 277; 6 Jur. 397.

[3] *In re* Salkeld and Slater, 12 A. and E. 767; 4 Per. and D. 732.

[4] Hall *v.* Laurence, 4 T. R. 589.

[5] Beck *v.* Sargent, 4 Taunt. 232.

[6] Soulsby *v.* Hodgson, 3 Burr. 1474.

[7] *In re* the Owners of Flag Lane Chapel *v.* the Mayor, &c., of Sunderland, 5 Jur. (N. S.) 894.

[8] Clements *v.* Fuller, 11 Jur. 242.

[9] Hunt *v.* Hunt, 5 Dowl. P. C. 442.

An award may be equivalent to the verdict of a jury; as where a market gardener whose premises adjoined those of a gas company brought an action against the company for the injury done to his crops by reason of the noxious matter issuing from the gas-works. During the trial the judge suggested a reference to an arbitrator, who was to determine as to the injury, and as to "what should be done" between the parties. The reference having taken place, the arbitrator made his award in respect of the damage sustained up to the date of the award, and no evidence having been adduced before him as to the respective damage, a verdict was entered up for the sum awarded. The company subsequently increased their works, and on a bill being filed by the market gardener, it was held that he was entitled to perpetual injunction to restrain the further manufacture of the gas in a manner injurious to his crops, the award of the arbitrator being under the circumstances equivalent to the verdict of a jury.[2]

An action on *assumpsit* was brought on an agreement to build a house according to certain drawings, plans and specifications, and to the satisfaction of the plaintiff, and with the best materials; alleging as breaches that the defendant did not build the house to the satisfaction of the plaintiff; and that he did not perform the work with the best materials. The defendant pleaded -first, *non assumpsit;* secondly, that he did the works to the satisfaction of the plaintiff; thirdly, that before the breach the contract was rescinded; fourthly, leave and license; fifthly, that he deviated from the drawings by the direction of the plaintiff's architect; sixthly, a plea stating an agreement between the plaintiff and himself to build a stone wall in lieu of the wall mentioned in the original agreement; seventhly, that by command of the plaintiff he erected a stone wall instead of a brick wall. The plaintiff thereupon took issue on the first two pleas, traversed the third, sixth, and seventh, replied *de injuriâ* to the fourth, and demurred to the fifth. The cause was at the assizes referred to an arbitrator, the costs of the cause and reference to abide the event; and the arbitrator awarded a general verdict to be entered for the defendant. On proceedings being taken to set aside the award, it was held that it was not uncertain, inconsistent, or repugnant; and that it was not necessary for the arbitrator to assess contingent damages on the demurrer, neither party having requested him to do so, but acted as if the matter had not been submitted to him. With regard to the fifth plea—namely, that the defendant deviated from the drawings by the direction of the plaintiff's architect, it was held that it was bad on general demurrer, as the architect was not shown to be the plaintiff's agent to bind him by any deviation from the approved drawings.[1]

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[1] Baker *v.* Hunter, 16 L. J. Exch. 203.

[2] Broadbent *v.* Imperial Gas Company, 7 De G. Mac. and G. 436; 26 L. J. Ch. 276; 3 Jur. (N. S.) 221; 34 L. T. 1.

To an action of *assumpsit* on a builder's bill, the particulars of demand being 104*l.* 12*s.*, the defendant pleaded payment of 30*l.* before action brought, and payment into court of 45*l.* more. The cause having been referred at *Nisi Prius* to a surveyor who was to measure and value the plaintiff's work, and to certify for whom and for what amount the verdict should be entered, and an order of *Nisi Prius* having been drawn up; he certified that he was of opinion that 74*l.* 7*s.* was a fair and proper sum to be paid to the plaintiff; and this was held to amount to a verdict for the defendant.[2] It has been already observed that no precise form of words is necessary to constitute an award, and that it is sufficient if the arbitrator expresses by it a decision upon the matter submitted to him. Nevertheless, where an arbitrator to whom a dispute between an architect and his clerk respecting a claim by the latter to wages was referred, stated in a letter that he had examined drawings made by the clerk, with an account of his time, which did not show experience or ability to the extent to justify a demand for remuneration under the circumstances; but in consideration of the clerk's services out of the office on some occasions, and to meet the case in a liberal manner, he proposed that the architect should pay the clerk 10*l.*; it was held that the latter part of the letter was a mere suggestion of the arbitrator, and not a decided opinion that the clerk was or was not entitled to recover 10*l.*, and therefore not a good award.[3]

A submission to arbitration empowered the arbitrator to settle and judge of alleged defects in a house, and to determine what was necessary to put the house in a perfect condition, and to settle certain claims for extra work by one of the parties; and further contained an agreement that the costs of the arbitration should abide the result of the award. The arbitrator having awarded a certain sum to be paid by one party to, and received by the other in full satisfaction of all the matters in difference, his award was held uncertain, and not final, for not deciding upon the various matters referred, and therefore void.[1]

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[1] Cooper *v.* Langdon, 9 Mee. and W. 60; 1 Dowl. (N. S.) 392.

[2] Salter *v.* Yates, 2 Mee. and W. 67.

[3] Lock *v.* Vulliamy, 5 B. and Ad. 600; 2 Nev. and M. 336.

Where an agreement provides that various things shall be done by the respective parties to it, and that if any disputes shall arise with respect to them, such disputes shall be settled by particular persons as arbitrators, the award of the arbitrators need not embrace any more of the matters provided for by the agreement than are brought before them by the parties.[2]

In an arbitration suit, a particular of a set-off for 20*l.* 12*s.* 6*d.* was stated in the following terms:—"To fitting up a shop in A. street, with 1 pair of glass doors, fanlight, locks, bolts, and hinges, to a partition to ditto, and moulding all complete, and fitting up shop window with glass case and linings and sundry work, nails, &c." On the hearing of the reference before a legal arbitrator, the value of all the specified work named in the particulars was proved to be worth 9*l.*; but under the words in the particulars, "sundry work, nails, &c.," the arbitrator (subject to the opinion of the Court) admitted evidence of other work done about the premises to the amount of 10*l.* 1*s.* And it was held that the evidence was rightly received by the arbitrator; and that if the plaintiff was misled or taken by surprise by the particulars, he should have asked for an adjournment of the reference to have enabled him to answer the evidence as to that claim.[3]

Surveyors are frequently appointed arbitrators to determine the amount of loss occasioned by fire; the following case illustrates how far they will be justified in rejecting evidence touching the matters in dispute. A submission referred the amount of loss by fire on "wool in the process of wooling, carding, scribbling, and spining;" in other parts of the submission "raw wool" was spoken of; and the arbitrator conceiving that he was not justified in taking into his consideration wool which had undergone a part of the process of manufacture, but was not at the time of the fire in any of the engines, refused to receive evidence applicable to that wool, he was held to have been justified in so doing; and the Court refused to disturb an award made on that principle.[1]

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[1] *In re* Riders, 3 Bing. N. C. 874; 1 Jur. 406.

[2] Hawksworth *v.* Bramwell, 5 Myl. and Cr. 281.

[3] Eastham *v.* Tyler, 2 B. C. Rep. 136.

An award ought always to be signed by all the arbitrators (including the umpire, if one be called in) in the presence of each other. The Court, however, refused to set aside an award because it was signed by the several arbitrators at different times and places, but intimated that they should not enforce it by attachment or rule.[2] In a case in which a reference was made to two arbitrators and an umpire to be chosen by them, who was to be present, and decide each reference as it might arise, and either of them might make an award; the umpire in the presence of the arbitrators disallowed the plaintiff part of his claim, which made the balance in favour of the defendant, and afterwards without notice to the arbitrator or defendant, made his award in favour of the plaintiff; the award was set aside by the Court.[3] Again, if the award is to be made by two arbitrators and an umpire, or any two of them, and one of them decline to act, the other two may make their award; but if they have before doing so consulted the one who declined to act, and he have made any suggestions, they cannot make their award if it differ from the suggestions unless they again consult or give notice to the third arbitrator who declined to act.[4]

An award is to be considered as published, when the parties have notice that it is ready for delivery on payment of the charges,[5] whether they be reasonable or not;[6] and it is complete if made in writing and ready to be delivered by the arbitrator within the appointed time, though it be not actually delivered.[7] If the arbitrators cannot make their award within the time limited by the rule of Court, or order of *Nisi Prius*, a rule may be obtained by consent, but not otherwise, for enlarging it; and where the submission is by agreement, without suit, the time may be enlarged, simply by the consent of the parties;[8] and an award so made is good, though it do not recite that the time was enlarged.[9] An agreement to enlarge the time should, however, contain a consent that it shall be made a rule of Court; for if it do not, no attachment will be granted for not performing an award made under it.[1]

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[1] *In re* Hurst, 1 Har. and Woll. 275.

[2] Stalworth *v.* Inns, 13 Mee. and W. 466; 2 Dowl. and L. 428; 14 L. J. Exch. 81; 9 Jur. 285.

[3] Potter *v.* Newman, 4 Dowl. P. C. 504; 2 C. M. and R. 742.

[4] *In re* Allen, 5 Nev. and M. 374; Perring and Keymer, 3 Ad. and Ell. 245.

[5] McArthur *v.* Campbell, 5 B. and Ad. 518; 2 Nev. and M. 444.

[6] Musselbrook *v.* Dunkin, 9 Bing. 605; 1 Dowl. P. C. 722.

[7] Brown *v.* Vawser, 4 East. 584.

[8] Teesdale *v.* Atkins, 2 Tidd's Prac. 880.

[9] George *v.* Lousley, 8 East. 13.

If the arbitrators are empowered themselves to enlarge the time for making their award to any other day, they may enlarge it more than once;[2] and an objection that the time for making an award has not been duly enlarged, is waived by proceeding in the reference with a knowledge of that fact.[3]

There may be a constructive consent of parties to enlargement of time for making the award; thus upon a compulsory reference under the Common Law Procedure Act, 1854 (17 & 18 Vict. c. 125), it will be no objection to entering up judgment on the award under § 3, that the award was made more than three months after the arbitrator entered on the reference, though the order of reference name no time, and no written consent for enlarging the time be given by the parties, if it appear that the parties have, within a month before the making of the award, acted upon the reference as still subsisting, as such acting will estop them from saying that the circumstances necessary to give jurisdiction to the arbitrator did not exist.[4]

Finally, an award made on a compulsory reference, may, by authority of a judge, on such terms as he may consider reasonable, be enforced at any time after seven days from the time of publication, notwithstanding that the time for moving to set it aside has not elapsed;[5] and after the award has been made, the authority of the arbitrators, in respect of the submission, cannot then be revoked.[6]

6. *Setting aside the Award.*

All applications to set aside any award made on a compulsory reference, are to be made within the first seven days of the term next following the publication of the award to the parties, whether in vacation or term. If no such application is made, or if no rule is granted thereon, or if any rule granted is afterwards discharged, the award is to be final between the parties.[7]

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[1] Jenkins *v.* Law, 8 T. R. 87.

[2] Payne *v.* Deakle, 1 Taunt. 509; Barrett v. Parry, 4 Taunt. 658.

[3] Laurence *v.* Hodgson, 1 Y. and J. 16.

[4] Tyerman *v.* Smith, 6 Ell. and Bl. 719.

[5] 17 and 18 Vict. c. 125, § 10.

[6] Phipps *v.* Ingram, 3 Dowl. P. C. 669.

[7] 17 and 18 Vict. c. 125, § 9.

Any arbitration or umpirage procured by corruption or undue means, shall be adjudged and esteemed void and of none effect, and shall be set aside by the Court on complaint made before the last day of the next term after it is made and published to the parties.[1] An award upon a general reference cannot be impeached for erroneous judgment upon facts, but it may for excess of power or mistake admitted by the arbitrators, as well as for corruption or misbehaviour. There must, however, be satisfactory evidence against the arbitrators to induce the Court to interfere.[2]

If a motion be not made before the last day of the next term, it will be too late, and an attachment for non-performance of the award may issue.[3] Where, however, there is a palpable objection upon the face of an award, though the Court cannot set it aside after the time limited by the statute has elapsed, they may refuse to enforce it.[4]

It has, however, been held, that the time limited by the statute for setting aside awards, made under submission by virtue of the statute does not attach on awards made under orders of *Nisi Prius*.[5] On the other hand, a motion to set aside an award made under an order of *Nisi Prius*, not under 9 and 10 W. 3. c. 15, must be made within the time allowed for moving for a new trial, unless sufficient reason for delay be shown.[6] The jurisdiction in matters of award belongs to the Court of which the submission is made a rule;[7] but, nevertheless, it has been held that the Court of Chancery had jurisdiction to relieve against an award, where it was one of the terms of an agreement to refer disputes to arbitration, that the submission might be made a rule of a Court of Law on the application of either party, but which had not been done.[8] Moreover, the Court of Chancery having once exercised its jurisdiction over an award, will retain it, although, on the coming in of the answer, it appear that the submission had been made a rule of a Court of Law by the defendant.[9]

Pending a reference to arbitration if any communication takes place between one of the parties to the reference and one or more of the referees, it will be a ground for setting aside the award, but not so if the fact of the communication be known at the time to all the parties to the reference; and no objection be made to it until after the award was made.[1] And again, it is no ground for setting aside an award that the arbitrator (a layman) examined witnesses, not upon oath or affirmation, if that mode of proceeding was not objected to at the time of their examination.[2] But the Court set aside an award where the arbitrators had, by agreement between themselves, separately examined witnesses out of court in the absence of the parties, though it was sworn that the matter in dispute amounted to only a few shillings.[3]

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[1] 9 and 10 W. 3. c. 15, § 2. [2] Morgan *v.* Mather, 2 Ves. J. 15.

[3] Freame *v.* Pinneger, Cowp. 23.

[4] Auriol *v.* Smith, 1 T. and R. 125. [5] Synge *v.* Jervoise, 8 East. 466.

[6] Rowsthorn *v.* Arnold, 6 B. and C. 629.

[7] Auriol *v.* Smith, 1 T. and R. 125.

[8] Nichols *v.* Roe, 5 Sim. 156. [9] Ibid.

An award will not be set aside if the arbitrator avail himself, in coming to a decision, of the judgment of another person.[4] Moreover, after the delivery of an award, the arbitrator cannot, though within the time limited by the submission, correct a mistake in the calculation of figures by making another award.[5] And the Court will not refer the award back to the arbitrator to correct the mistake without the consent of the parties.[6] If an arbitrator erroneously makes an award, the Court will not set it aside on the ground that part of it was founded on a mistake of law;[7] and this whether the arbitrator be a professional person or not.[8] But it is no ground for setting aside an award that the unsuccessful party suffered a surprise, inasmuch as an arbitrator has power to postpone the proceedings upon a reasonable application being made to him to do so.[9] In a case in which a barrister to whom a cause was referred improperly admitted evidence, the Court refused to disturb his award;[10] for an arbitrator's decision on the admissibility of evidence before him is final.[11] Neither, where matters in difference are referred to a legal arbitrator absolutely will the Court entertain a motion for reviewing his decision either upon the law or the facts.[12] And they will not set aside an award on the ground that the arbitrator has made a mistake where all the facts were placed before him, and he was competent from his occupation to judge of them, unless it be clearly seen that it was a mistake.[13]

Under certain circumstances an award, though informal, cannot be impeached; as, where a cause was referred to arbitration by an order of reference, directing the witnesses to be sworn before a judge, and the arbitrator took the evidence of the plaintiff's witnesses not upon oath, which the defendant objected to, though he permitted his own witnesses to be examined without being sworn; it was held that by this proceeding the defendant had waived the objection, and that he could not be allowed, on this ground, to impeach the award.[1] An objection to an award, on the ground of irregular and improper conduct on the part of the arbitrators, was held to be waived, where such conduct had been known to the party injured three weeks before the award was made without any objection being taken.[2]

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[1] Mills v. Bowers, 3 Kay and J. 66. [2] Biggs v. Hansell, 16 C. B. 562.

[3] *In re* Plews, 14 L. J. Q. B. 139; 9 Jur. 160.

[4] Emery v. Wase, 5 Ves. J. 848. [5] Ervine v. Elnon, 8 East. 54.

[6] *Ex parte* Cuerton, 7 D. and R. 774.

[7] Armstrong v. Marshall, 4 Dowl. P. C. 593.

[8] Haydock v. Beard, 2 Jur. 1069.

[9] Solomon v. Solomon, 28 L. J. (N. S.) Exch. 129.

[10] Berryman v. Steggal, 2 Dowl. P. C. 726.

[11] Symes v. Goodfellow, 4 Dowl. P. C. 642.

[12] Ashton v. Pointer, 2 Dowl. P. C. 651; 3 Ib. 201.

In an action for not repairing, the arbitrators to whom the matter was referred made their award upon a view of the premises without calling the parties before them; but their award was set aside, on the ground that other facts than the state of repair of the premises might be necessary to be inquired into.[3]

7. *Costs.*

An arbitrator cannot, unless such power is expressly reserved to him by the submission, award to himself a sum (named or otherwise) for his own costs and expenses.[4] If, however, having authority, he awards an excessive sum to be paid to himself, the Court will refer it to the prothonotary to reduce it.[5]

With regard to the fees and remuneration of an arbitrator, it may be desirable to observe that the Court has no general jurisdiction over arbitrators as to the amount of fees charged by them, whether the reference be under a rule of Court or not; nor over the attorney who prepares the award; the remedy would appear to be by action for money had and received; but to give the Court jurisdiction in the matter, a clear intention of the parties to the arbitration must at all events be shown.[6] Where, however, there is an express promise to pay arbitrators the costs of their award, a joint action for their recovery will lie against the parties liable, even though no demand for payment of the costs may have been previously made;[7] and where a party to an arbitration is compelled to pay to a lay arbitrator an exorbitant sum in order to take up the award, he may maintain an action for money had and received, to recover the excess beyond what is a proper remuneration for the arbitrator's services.[1]

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[1] Allen *v.* Francis, 9 Jur. 691.

[2] Bignoll *v.* Gale, 2 Man. and G. 830; 3 Scott, N. R. 108.

[3] Anon. 2 Chit. 44.

[4] Roberts *v.* Eberhardt, 3 C. B. (N. S.) 482; 4 Jur. (N. S.) 898.

[5] Miller *v.* Robe, 3 Taunt. 461.

[6] Dossett *v.* Gingell, 2 Man. and G. 870; 3 Scott, N. R. 179.

[7] Hoggins *v.* Gordon, 6 Jur. 895.

If by the submission the costs of an arbitration are to abide the event of the award, it will be an excess of jurisdiction for the arbitrator to determine their amount.[2] And, indeed, in that event, the arbitrator need not notice the costs in his award, for he has no power over them.[3] Further, where before trial of a cause, the parties agree to refer the case to an arbitrator, and that the costs of the cause shall follow the event, a finding for the plaintiff upon one issue out of several, with a farthing damages, it has been held, will carry the costs of the cause;[4] and if there be a substantial finding for one of the parties, that party, it would seem, would be entitled to the costs, though there be a finding in respect of some lesser matters in favour of the other party.[5]

It is not necessary that the decision should be wholly in favour of one of the parties in order to have the costs; the meaning being in such case that the costs are to follow the event of the action, as decided by the award. The event of the award may be such as to put each party to the arbitration in such a position that each shall be called to do certain things; as, the one to deliver certain goods to the other, who, on the other hand, shall pay a certain sum of money, and a general release to be given; and in such a case it has been held that the award was not uncertain as to costs (which were to abide the event), as the effect of it was that each party should pay his own costs.[6] Then if an award be that two parties on the same side should pay a moiety of the costs of the arbitration, and of making the submission a rule of Court; and one of those parties, in order to get the award out of the hands of the arbitrators, pays the whole of the costs; it was held that he might have an attachment against the other to compel repayment of the moiety;[7] but an action would have been maintainable if the party had preferred that mode of proceeding.[8]

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[1] Barnes *v.* Braithwaite, 2 H. and N. 569.

[2] Kendrick *v.* Davis, 5 Dowl. P. C. 693.

[3] Jupp *v.* Grayson, 3 Dowl. P. C. 199; 1 C. M. and R. 523; Boodle *v.* Davis, 3 A. and E. 200; 4 Nev. and M. 788.

[4] Wiggins *v.* Cook, 33 L. T. 224.

[5] Matlock Gas Coke Company *v.* Peters, 6 El. and Bl. 215.

[6] Yates *v.* Knight, 2 Bing. N. R. 277; 2 Scott 470.

[7] Hicks *v.* Richardson, 1 Bos. and P. 93. Stokes *v.* Lewis, 2 Smith, 12.

[8] Cardwell *on Arbitration*, 145, 167.

8. *Arbitrations under the Companies Clauses, Lands Clauses, and Railway Clauses Acts,* 1845.

Any work relating to the law of arbitrations would be imperfect if the provisions on the subject contained in the above-mentioned Acts were omitted. Engineers, architects, and surveyors, are more frequently than others called in as arbitrators when disputes as to value are to be settled; and it will therefore be convenient to them to have those Acts at hand to refer to upon such occasions. It should be borne in mind, however, that the Acts above mentioned are not of general application; and that it is only when their provisions (or any of them) are incorporated with the special Act under which the arbitration may take place that they are of any force. In all cases, therefore, it is necessary before proceeding with the reference, that the terms of the special Act should be consulted in order to ascertain how much of the Acts referred to are incorporated, and how far special provisions on the subject of arbitration may have been made.

Regarding the choice of an arbitrator, it is to be observed that parties referring matters to arbitration will always do well to make the reference to one or more entire strangers, instead of to friends or neighbours, who may be either biassed towards one or the other of the parties, or be otherwise subject to local prejudices; and whose decisions therefore may be equally dissatisfactory to both parties to the reference. It is said that references to arbitration are sometimes the means of saving expense, and that they are peculiarly adapted to the settlement of matters of account and mercantile transactions, which are difficult and almost impossible to be adjusted on a trial at law. As a general principle this may be true; but nevertheless it is obvious that if the arbitrators be not well chosen, prolonged litigation and expense may be the result of the reference.

1. *The Companies Clauses Consolidation Act,* 1845, 8 *Vic. Cap.* 16.

SETTLEMENT OF DISPUTES BY ARBITRATION.

§ 128. *Where Questions are to be determined by Arbitration, Arbitrators to be appointed within Fourteen Days after Notice.*—When any dispute authorized or directed by this or the special Act, or any Act incorporated therewith, to be settled by arbitration, shall have arisen, then, unless both parties shall concur in the appointment of a single arbitrator, each party, on the request of the other party, shall by writing under his hand nominate and appoint an arbitrator to whom such dispute shall be referred; and after any such appointment shall have been made, neither party shall have power to revoke the same without the consent of the other, nor shall the death of either party operate as such revocation; and if for the space of fourteen days after any such dispute shall have arisen, and after a request in writing shall have been served by the one party on the other party to appoint an arbitrator, such last-mentioned party fail to appoint such arbitrator, then upon such failure the party making the request, and having himself appointed an arbitrator, may appoint such arbitrator to act on behalf of both parties, and such arbitrator may proceed to hear and determine the matters which shall be in dispute; and in such case the award or determination of such single arbitrator shall be final.

§ 129. *Vacancy of Arbitrator to be supplied.*—If before the matters so referred shall be determined any arbitrator appointed by either party die, or become incapable or refuse or for seven days neglect to act as arbitrator, the party by whom such arbitrator was appointed may nominate and appoint in writing some other person to act in his place; and if for the space of seven days after notice in writing from the other party for that purpose he fail to do so, the remaining or other arbitrator may proceed *ex parte*; and every arbitrator so to be substituted as aforesaid shall have the same powers and authorities as were vested in the former arbitrator at the time of such his death, refusal, or disability as aforesaid.

§ 130. *Appointment of Umpire.*—Where more than one arbitrator shall have been appointed, such arbitrators shall, before they enter upon the matters referred to them, nominate and appoint by writing under their hands an umpire to decide on any such matters on which they shall differ; and if such umpire shall die, or refuse or for seven days neglect to act, they shall forthwith after such death, refusal, or neglect, appoint another umpire in his place; and the decision of every such umpire on the matters so referred to him shall be final.

§ 131. *Board of Trade empowered to appoint an Umpire, on Neglect of the Arbitrators, in case of Railway Companies.*—If in either of the cases aforesaid the said arbitrators shall refuse, or shall, for seven days after request of either party to such arbitration, neglect to appoint an umpire, it shall be lawful for the Board of Trade, if they think fit, in any case in which a railway company shall be such arbitration, to appoint an umpire; and the decision of such umpire on the matters on which the arbitrators shall differ shall be final.

§ 132. *Power of Arbitrators to call for Books, &c.*—The said arbitrators or their umpire may call for the production of any documents in the possession or power of either party which they or he may think necessary for determining the question in dispute, and may examine the parties or their witnesses on oath, and administer the oaths necessary for that purpose.

§ 133. *Costs to be in the Discretion of the Arbitrators.*—Except where by this or the special Act, or any Act incorporated therewith, it shall be otherwise provided, the costs of and attending every such arbitration to be determined by the arbitrators, shall be in the discretion of the arbitrators or their umpires, as the case may be.

§ 134. *Submission to Arbitration to be made Rule of Court.*—The submission to any such arbitration may be made a rule of any of the superior Courts, on the application of either of the parties.

2. *The Lands Clauses Consolidation Act*, 1845, 8 *Vict. Cap.* 18.

PURCHASE AND TAKING OF LANDS OTHERWISE THAN BY AGREEMENT.

§ 16. *Capital to be subscribed before compulsory Powers of Purchase put in force.*—Where the undertaking is intended to be carried into effect by means of a capital to be subscribed by the promoters of the undertaking, the whole of the capital or estimated sum for defraying the expenses of the undertaking shall be subscribed under contract binding the parties thereto, their heirs, executors, and administrators, for the payment of the several sums by them respectively subscribed, before it shall be lawful to put in force any of the powers of this or the special Act, or any Act incorporated therewith, in relation to the compulsory taking of land for the purposes of the undertaking.

§ 17. *A Certificate of Two Justices to be Evidence that the Capital has been subscribed.*—A certificate under the hands of two justices, certifying that the whole of the prescribed sum has been subscribed, shall be sufficient evidence thereof, and on the application of the promoters of the undertaking, and the production of such evidence as such justices think proper and sufficient, such justices shall grant such certificate accordingly.

§ 18. *Notice of Intention to take Lands.*—When the promoters of the undertaking shall require to purchase or take any of the lands which by this or the special Act, or any Act incorporated therewith, they are authorized to purchase or take, they shall give notice thereof to all the parties interested in such lands, or to the parties enabled by this Act to sell and convey or release the same, or such of the said parties as shall, after diligent inquiry, be known to the promoters of the undertaking, and by such notice shall demand from such parties the particulars of their estate and interest in such lands, and of the claims made by them in respect thereof; and every such notice shall state the particulars of the land so required, and that the promoters of the undertaking are willing to treat for the purchase thereof, and as to the compensation to be made to all parties for the damage that may be sustained by them by reason of the execution of the works.

§ 19. *Service of Notices on Owners and Occupiers of Lands.*—All notices required to be served by the promoters of the undertaking upon the parties interested in or entitled to sell any such lands shall either be served personally on such parties or left at their last usual place of abode, if any such can after diligent inquiry be found; and in case any such parties shall be absent from the United Kingdom, or cannot be found after diligent inquiry, shall also be left with the occupier of such lands, or, if there be no such occupier, shall be affixed upon some conspicuous part of such lands.

§ 20. *Service of Notice on a Corporation aggregate.*—If any such party be a corporation aggregate such notice shall be left at the principal office of business of such corporation, or if no such office can after diligent inquiry be found, shall be served on some principal member, if any, of such corporation, and such notice shall also be left with the occupier of such lands, or, if there be no such occupier, shall be affixed upon some conspicuous part of such lands.

§ 21. *If Parties fail to treat, or in case of Dispute, Question to be settled as after mentioned.*—If, for twenty-one days after the service of such notice, any such party shall fail to state the particulars of his claim in respect of any such land, or to treat with the promoters of the undertaking in respect thereof, or if such party and the promoters of the undertaking shall not agree as to the amount of the compensation to be paid by the promoters of the undertaking for the interest in such lands belonging to such party, or which he is by this or the special Act enabled to sell, or for any damage that may be sustained by him by reason of the execution of the works, the amount of such compensation shall be settled in the manner hereinafter provided for settling cases of disputed compensation.

§ 22. *Disputes as to Compensation where the Amount claimed does not exceed 50l. to be settled by Two Justices.*—If no agreement be come to between the promoters of the undertaking and the owners of or parties by this Act enabled to sell and convey or release any lands taken or required for or injuriously affected by the execution of the undertaking, or any interest in such lands, as to the value of such lands or of any interest therein, or as to the compensation to be made in respect thereof, and if in any such case the compensation claimed shall not exceed fifty pounds, the same shall be settled by two justices.

§ 23. *Compensation exceeding 50l. to be settled by Arbitration or Jury, at the Option of the Party claiming Compensation.*—If the compensation claimed or offered in any such case shall exceed fifty pounds, and if the party claiming compensation desire to have the same settled by arbitration, and signify such desire by notice in writing to the promoters of the undertaking, before they have issued their warrant to the sheriff to summon a jury in respect of such lands, under the provisions hereinafter contained, stating in such notice the nature of the interest in respect of which such party claims compensation, and the amount of the compensation so claimed, the same shall be so settled accordingly; but unless the party claiming compensation shall as aforesaid signify his desire to have the question of such compensation settled by arbitration, or if when the matter shall have been referred to arbitration the arbitrators or their umpire shall for three months have failed to make their or his award, or if no final award shall be made, the question of such compensation shall be settled by the verdict of a jury, as hereinafter provided.

§ 24. *Method of proceeding for settling Disputes as to Compensation by Justices.*—It shall be lawful for any justice, upon the application of either party with respect to any question of disputed compensation by this or the special Act, or any Act incorporated therewith, authorized to be settled by two justices, to summon the other party to appear before two justices, at a time and place to be named in the summons, and upon the appearance of such parties, or in the absence of any of them, upon proof of due service of the summons, it shall be lawful for such justices to hear and determine such question, and for that purpose to examine such parties or any of them, and their witnesses, upon oath, and the costs of every such inquiry shall be in the discretion of such justices, and they shall settle the amount thereof.

§ 25. *Appointment of Arbitrator when Questions are to be determined by Arbitration.*—When any question of disputed compensation by this or the special Act, or any Act incorporated therewith, authorized or required to be settled by arbitration, shall have arisen, then unless both parties shall concur in the appointment of a single arbitrator, each party, on the request of the other party, shall nominate and appoint an arbitrator, to whom such dispute shall be referred; and every appointment of an arbitrator shall be made on the part of the promoters of the undertaking under the hands of the said promoters or any two of them, or of their secretary or clerk, and on the part of any other party under the hand of such party, or if such party be a corporation aggregate under the common seal of such corporation; and such appointment shall be delivered to the arbitrator, and shall be deemed a submission to arbitration on the part of the party by whom the same shall be made; and after any such appointment shall have been made neither party shall have power to revoke the same without the consent of the other, nor shall the death of either party operate as a revocation; and if for the space of fourteen days after any such dispute shall have arisen, and after a request in writing, in which shall be stated the matter so required to be referred to arbitration, shall have been served by the one party on the other party to appoint an arbitrator, such last-mentioned party fail to appoint such arbitrator, then upon such failure the party making the request, and having himself appointed an arbitrator, may appoint such arbitrator to act on behalf of both parties, and such arbitrator may proceed to hear and determine the matters which shall be in dispute, and in such case the award or determination of such single arbitrator shall be final.

§ 26. *Vacancy of Arbitrator to be supplied.*—If before the matters so referred shall be determined, any arbitrator appointed by either party die, or become incapable, the party by whom such arbitrator was appointed may nominate and appoint in writing some other person to act in his place, and if, for the space of seven days after notice in writing from the other party for that purpose, he fail to do so, the remaining or other arbitrator may proceed *ex parte;* and every arbitrator so to be substituted as aforesaid shall have the same powers and authorities as were vested in the former arbitrator at the time of such his death or disability as aforesaid.

§ 27. *Appointment of Umpire.*—Where more than one arbitrator shall have been appointed, such arbitrators shall, before they enter upon the matters referred to them, nominate and appoint, by writing under their hands, an umpire to decide on any such matters on which they shall differ, or which shall be referred to him under the provisions of this or the special Act, and if such umpire shall die, or become incapable to act, they shall forthwith after such death or incapacity appoint another umpire in his place, and the decision of every such umpire on the matters so referred to him shall be final.

§ 28. *Board of Trade empowered to appoint an Umpire on neglect of the Arbitrators, in case of Railway Companies.*—If in either of the cases aforesaid the said arbitrators shall refuse, or shall, for seven days after request of either party to such arbitration, neglect to appoint an umpire, the Board of Trade, in any case in which a railway company shall be one party to the arbitration, and two justices in any other case, shall, on the application of either party to such arbitration, appoint an umpire, and the decision of such umpire on the matters on which the arbitrators shall differ, or which shall be referred to him under this or the special Act, shall be final.

§ 29. *In case of Death of single Arbitrator the Matter to begin* de novo.—If, when a single arbitrator shall have been appointed, such arbitrator shall die or become incapable to act before he shall have made his award, the matters referred to him shall be determined by arbitration under the provisions of this or the special Act in the same manner as if such arbitrator had not been appointed.

§ 30. *If either Arbitrator refuse to act, the other to proceed* ex parte.—If, where more than one arbitrator shall have been appointed, either of the arbitrators refuse or for seven days neglect to act, the other arbitrator may proceed *ex parte*, and the decision of such other arbitrator shall be as effectual as if he had been the single arbitrator appointed by both parties.

§ 31. *If Arbitrators fail to make their Award within Twenty-one Days, the Matter to go to the Umpire.*—If where more than one arbitrator shall have been appointed, and where neither of them shall refuse or neglect to act as aforesaid, such arbitrators shall fail to make their award within twenty-one days after the day on which the last of such arbitrators shall have been appointed, or within such extended time (if any) as shall have been appointed for that purpose by both such arbitrators under their hands, the matters referred to them shall be determined by the umpire to be appointed as aforesaid.

§ 32. *Power of Arbitrators to call for Books, &c.*—The said arbitrators or their umpire may call for the production of any documents in the possession or power of either party which they or he may think necessary for determining the question in dispute, and may examine the parties or their witnesses on oath, and administer the oaths necessary for that purpose.

§ 33. *Arbitrator or Umpire to make a Declaration.*—Before any arbitrator or umpire shall enter into the consideration of any matters referred to him, he shall in the presence of a justice make and subscribe the following declaration; that is to say,

"I *A. B.* do solemnly and sincerely declare, that I will faithfully and honestly, and to the best of my skill and ability, hear and determine the matters referred to me under the provisions of the Act [*naming the special Act*]. *A. B.*

"Made and subscribed in the presence of ."

And such declaration shall be annexed to the award when made; and if any arbitrator or umpire, having made such declaration, shall wifully act contrary thereto, he shall be guilty of a misdemeanour.

§ 34. *Costs of Arbitration, how to be borne.*—All the costs of any such arbitration, and incident thereto, to be settled by the arbitrators, shall be borne by the promoters of the undertaking, unless the arbitrators shall award the same or a less sum than shall have been offered by the promoters of the undertaking, in which case each party shall bear his own costs incident to the arbitration, and the costs of the arbitrators shall be borne by the parties in equal proportions.

§ 35. *Award to be delivered to the Promoters of the Undertaking.*—The arbitrators shall deliver their award in writing to the promoters of the undertaking, and the said promoters shall retain the same, and shall forthwith, on demand, at their own expense, furnish a copy thereof to the other party to the arbitration, and shall at all times, on demand, produce the said award, and allow the same to be inspected or examined by such party or any person appointed by him for that purpose.

§ 36. *Submission may be made a Rule of Court.*—The submission to any such arbitration may be made a rule of any of the superior Courts, on the application of either of the parties.

§ 37. *Award not void through Error in Form.*—No award made with respect to any question referred to arbitration under the provisions of this or the special Act, shall be set aside for irregularity or error in matter of form.

§ 38. *Promoters of the Undertaking to give Notice before summoning a Jury.*—Before the promoters of the undertaking shall issue their warrant for summoning a jury for settling any case of disputed compensation, they shall give not less than ten days' notice to the other party of their intention to cause such jury to be summoned, and in such notice the promoters of the undertaking shall state what sum of money they are willing to give for the interest in such lands sought to be purchased by them from such party, and for the damage to be sustained by him by the execution of the works.

§ 39. *Warrant for summoning Jury to be addressed to the Sheriff.*—In every case in which any such question of disputed compensation shall be required to be determined by the verdict of a jury, the promoters of the undertaking shall issue their warrant to the sheriff, requiring him to summon a jury for that purpose, and such warrant shall be under the common seal of the promoters of the undertaking if they be a corporation, or if they be not a corporation under the hands and seals of such promoters or any two of them ; and if such sheriff be interested in the matter in dispute such application shall be made to some coroner of the county in which the lands in question, or some part thereof, shall be situate, and if all the coroners of such county be so interested, such application may be made to some person having filled the office of sheriff or coroner in such county, and who shall be then living there, and who shall not be interested in the matter in dispute ; and with respect to the persons last mentioned, preference shall be given to one who shall have most recently served either of the said offices ; and every ex-sheriff, coroner, or ex-coroner, shall have power, if he think fit, to appoint a deputy or assessor.

§ 40. *Provisions applicable to Sheriff to apply to Coroner.*—Throughout the enactments contained in this Act relating to the reference to a jury, where the term " sheriff " is used, the provisions applicable thereto shall be held to apply to every coroner or other person lawfully acting in his place ; and in every case in which any such warrant shall have been directed to any other person than the sheriff, such sheriff shall, immediately on receiving notice of the delivery of the warrant, deliver over, on application for that purpose, to the person to whom the same shall have been directed, or to any person appointed by him to receive the same, the jurors' book and special jurors' list belonging to the county where the lands in question shall be situate.

§ 41. *Jury to be summoned.*—Upon the receipt of such warrant the sheriff shall summon a jury of twenty-four indifferent persons, duly qualified to act as common jurymen in the superior Courts, to meet at a convenient time and place to be appointed by him for that purpose, such time not being less than fourteen nor more than twenty-one days after the receipt of such warrant, and such place not being more than eight miles distant from the lands in question, unless by consent of the parties interested, and he shall forthwith give notice to the promoters of the works of the time and place so appointed by him.

§ 42. *Jury to be impannelled.*—Out of the jurors appearing upon such summons a jury of twelve persons shall be drawn by the sheriff, in such manner as juries for trials of issues joined in the superior Courts, are by law required to be drawn, and if a sufficient number of jurymen do not appear in obedience to such summons, the sheriff shall return other indifferent men, duly qualified as aforesaid, of the bystanders, or others that can speedily be procured, to make up the jury to the number aforesaid; and all parties concerned may have their lawful challenges against any of the jurymen, but no such party shall challenge the array.

§ 43. *Sheriff to preside; Witnesses to be summoned.*—The sheriff shall preside on the said inquiry, and the party claiming compensation shall be deemed the plaintiff, and shall have all such rights and privileges as the plaintiff is entitled to in the trial of actions at law; and if either party so request in writing, the sheriff shall summon before him any person considered necessary to be examined as a witness touching the matters in question, and on the like request the sheriff shall order the jury, or any six or more of them, to view the place or matter in controversy, in like manner as views may be had in the trial of actions in the superior Courts.

§ 44. *Penalty on Sheriff and Jury for Default.*—If the sheriff make default in any of the matters hereinbefore required to be done by him in relation to any such trial or inquiry, he shall forfeit fifty pounds for every such offence, and such penalty shall be recoverable by the promoters of the undertaking by action in any of the superior Courts; and if any person summoned and returned upon any jury under this or the special Act, whether common or special, do not appear, or if appearing, he refuse to make oath, or in any other manner unlawfully neglect his duty, he shall, unless he show reasonable excuse to the satisfaction of the sheriff, forfeit a sum not exceeding ten pounds, and every such penalty payable by a sheriff or juryman shall be applied in satisfaction of the costs of the inquiry, so far as the same will extend; and, in addition to the penalty hereby imposed, every such juryman shall be subject to the same regulations, pains, and penalties, as if such jury had been returned for the trial of an issue joined in any of the superior Courts.

§ 45. *Penalty on Witnesses making Default.*—If any person duly summoned to give evidence upon any such inquiry, and to whom a tender of his reasonable expenses shall have been made, fail to appear at the time and place specified in the summons without sufficient cause, or if any person, whether summoned or not, who shall appear as a witness, refuse to be examined on oath touching the subject matter in question, every person so offending shall forfeit to the party aggrieved a sum not exceeding ten pounds.

§ 46. *Notice of Inquiry.*—Not less than ten days' notice of the time and place of the inquiry shall be given in writing by the promoters of the undertaking to the other party.

§ 47. *If the Party make Default the Inquiry not to proceed.*—If the party claiming compensation shall not appear at the time appointed for the inquiry such inquiry shall not be further proceeded in, but the compensation to be paid shall be such as shall be ascertained by a surveyor appointed by two justices in manner hereinafter provided.

§ 48. *Jury to be sworn.*—Before the jury proceed to inquire of and assess the compensation or damage in respect of which their verdict is to be given, they shall make oath that they will truly and faithfully inquire of and assess such compensation or damage, and the sheriff shall administer such oaths, as well as the oaths of all persons called upon to give evidence.

§ 49. *Sums to be paid for Purchase of Lands and for Damage, to be assessed separately.*—Where such inquiry shall relate to the value of lands to be purchased, and also to compensation claimed for injury done or to be done to the lands held therewith, the Jury shall deliver their verdict separately for the sum of money to be paid for the purchase of the lands required for the works, or of any interest therein belonging to the party with whom the question of disputed compensation shall have arisen, or which, under the provisions herein contained, he is enabled to sell or convey, and for the sum of money to be paid by way of compensation for the damage, if any, to be sustained by the owner of the lands by reason of the severing of the lands taken from the other lands of such owner, or otherwise injuriously affecting such lands by the exercise of the powers of this or the special Act, or any Act incorporated therewith.

§ 50. *Verdict and Judgment to be recorded.*—The sheriff before whom such inquiry shall be held shall give judgment for the purchase money or compensation assessed by such jury, and the verdict and judgment shall be signed by the sheriff, and being so signed, shall be kept by the clerk of the peace among the records of the general or quarter sessions of the county in which the lands or any part thereof shall be situate in respect of which such purchase money or compensation shall have been awarded; and such verdicts and judgments shall be deemed records, and the same or true copies thereof shall be good evidence in all courts and elsewhere, and all persons may inspect the said verdicts and judgments, and may have copies thereof or extracts therefrom, on paying for each inspection thereof one shilling, and for every one hundred words copied or extracted therefrom sixpence, which copies or extracts the clerk of the peace is hereby required to make out, and to sign and certify the same to be true copies.

§ 51. *Costs of the Inquiry how to be borne.*—On every such inquiry before a jury, where the verdict of the jury shall be given for a greater sum than the sum previously offered by the promoters of the undertaking, all the costs of such inquiry shall be borne by the promoters of the undertaking; but if the verdict of the jury be given for the same or a less sum than the sum previously offered by the promoters of the undertaking, or if the owner of the lands shall have failed to appear at the time and place appointed for the inquiry, having received due notice thereof, one half of the costs of summoning, impannelling, and returning the jury, and of taking the inquiry and recording the verdict and judgment thereon, in case such verdict shall be taken, shall be defrayed by the owner of the lands, and the other half by the promoters of the undertaking, and each party shall bear his own costs, other than as aforesaid, incident to such inquiry.

§ 52. *Particulars of the Costs.*—The costs of any such inquiry shall, in case of difference, be settled by one of the Masters of the Court of Queen's Bench of England or Ireland, according as the lands are situate, on the application of either party, and such costs shall include all reasonable costs, charges, and expenses incurred in summoning, impannelling, and returning the jury, taking the inquiry, the attendance of witnesses, the employment of counsel and attorneys, recording the verdict and judgment thereon, and otherwise incident to such inquiry.

§ 53. *Payment of Costs.*—If any such costs shall be payable by the promoters of the undertaking, and if within seven days after demand such costs be not paid to the party entitled to receive the same, they shall be recoverable by distress, and on application to any justice he shall issue his warrant accordingly; and if any such costs shall be payable by the owner of the lands or of any interest therein, the same may be deducted and retained by the promoters of the undertaking, out of any money awarded by the jury to such owner, or determined by the valuation of a surveyor under the provision hereinafter contained; and the payment or deposit of the remainder, if any, of such money shall be deemed payment and satisfaction of the whole thereof, or if such costs shall exceed the amount of the money so awarded or determined, the excess shall be recoverable by distress, and on application to any justice he shall issue his warrant accordingly.

§ 54. *Special Jury to be summoned at the Request of either Party.*—If either party desire any such question of disputed compensation as aforesaid to be tried before a special jury, such question shall be so tried, provided that notice of such desire, if coming from the other party, be given to the promoters of the undertaking before they have issued their warrant to the sheriff; and for that purpose the promoters of the undertaking shall by their warrant to the sheriff require him to nominate a special jury for such trial; and thereupon the sheriff shall, as soon as conveniently may be after the receipt by him of such warrant, summon both the parties to appear before him, by themselves or their attorneys, at some convenient time and place appointed by him for the purpose of nominating a special jury (not being less than five nor more than eight days from the service of such summons); and at the place and time so appointed, the sheriff shall proceed to nominate and strike a special jury, in the manner in which such juries shall be required by the laws for the time being in force to be nominated or struck by the proper officers of the superior Courts, and the sheriff shall appoint a day, not later than the eighth day after striking of such jury, for the parties or their agents to appear before him to reduce the number of such jury, and thereof shall give four days' notice to the parties; and on the day so appointed, the sheriff shall proceed to reduce the said special jury to the number of twenty, in the manner used and accustomed by the proper officers of the superior Courts.

§ 55. *Deficiency of Special Jurymen.*—The special jury on such inquiry shall consist of twelve of the said twenty who shall first appear on the names being called over, the parties having their lawful challenges against any of the said jurymen; and if a full jury do not appear, or if after such challenges a full jury do not remain, then, upon the application of either party, the sheriff shall add to the lists of such jury the names of any other disinterested persons qualified to act as special or common jurymen, who shall not have been previously struck off the aforesaid list, and who may then be attending the court, or can speedily be procured, so as to complete such jury, all parties having their lawful challenges against such persons; and the sheriff shall proceed to the trial and adjudication of the matters in question by such jury, and such trial shall be attended in all respects with the like incidents and consequences, and the like penalties shall be applicable, as hereinbefore provided in the case of a trial by common jury.

§ 56. *Other Inquiries before same Special Jury by consent.*—Any other inquiry than that for the trial of which such special jury may have been struck and reduced as aforesaid, may be tried by such jury, provided the parties thereto respectively shall give their consent to such trial.

§ 57. *Jurymen not to attend more than once a Year.*—No juryman shall, without his consent, be summoned or required to attend any such proceeding as aforesaid more than once in any year.

§ 58. *Compensation to absent Parties to be determined by a Surveyor appointed by two Justices.*—The purchase money or compensation to be paid for any lands to be purchased or taken by the promoters of the undertaking from any party who, by reason of absence from the kingdom, is prevented from treating, or who cannot after diligent inquiry be found, or who shall not appear at the time appointed for the inquiry before the jury, as hereinbefore provided for, after due notice thereof, and the compensation to be paid for any permanent injury to such lands, shall be such as shall be determined by the valuation of such able practical surveyor as two justices shall nominate for that purpose, as hereinafter mentioned.

§ 59. *Two Justices to nominate a Surveyor.*—Upon application by the promoters of the undertaking to two justices, and upon such proof as shall be satisfactory to them that any such party is, by reason of absence from the kingdom, prevented from treating, or cannot after diligent inquiry be found, or that any such party failed to appear on such inquiry before a jury as aforesaid, after due notice to him for that purpose, such justices shall, by writing under their hands, nominate an able practical surveyor for determining such compensation as aforesaid, and such surveyor shall determine the same accordingly, and shall annex to his valuation a declaration in writing subscribed by him of the correctness thereof.

§ 60. *Declaration to be made by the Surveyor.*—Before such surveyor shall enter upon the duty of making such valuation as aforesaid he shall, in the presence of such justices, or one of them, make and subscribe the declaration following at the foot of such nomination; (that is to say),

"I, *A. B.* do solemnly and sincerely declare, that I will faithfully, impartially, and honestly, according to the best of my skill and ability, execute the duty of making the valuation hereby referred to me. *A. B.*

"Made and subscribed in the presence of ."

And if any surveyor shall corruptly make such declaration, or having made such declaration, shall wilfully act contrary thereto, he shall be guilty of a misdemeanour.

§ 61. *Valuation, &c., to be produced to the Owner of the Lands on demand.*—The said nomination and declaration shall be annexed to the valuation to be made by such surveyor, and shall be preserved together therewith by the promoters of the undertaking, and they shall at all times produce the said valuation and other documents on demand, to the owner of the lands comprised in such valuation, and to all other parties interested therein.

§ 62. *Expenses to be borne by Promoters.*—All the expenses of and incident to every such valuation shall be borne by the promoters of the undertaking.

§ 63. *Purchase Money and Compensation, how to be estimated.*—In estimating the purchase money or compensation to be paid by the promoters of the undertaking, in any of the cases aforesaid, regard shall be had by the justices, arbitrators, or surveyors, as the case may be, not only to the value of the land to be purchased or taken by the promoters of the undertaking, but also to the damage, if any, to be sustained by the owner of the lands by reason of the severing of the lands taken from the other lands of such owner, or otherwise injuriously affecting such other lands by the exercise of the powers of this or the special Act, or any Act incorporated therewith.

§ 64. *Where Compensation to absent Party has been determined by a Surveyor, the Party may have the same submitted to Arbitration.*—When the compensation payable in respect of any lands, or any interest therein, shall have been ascertained by the valuation of a surveyor, and deposited in the bank under the provisions herein contained, by reason that the owner of or party entitled to convey such lands or such interest therein as aforesaid could not be found or was absent from the kingdom, if such owner or party shall be dissatisfied with such valuation it shall be lawful for him, before he shall have applied to the Court of Chancery for payment or investment of the moneys so deposited under the provisions herein contained, by notice in writing to the promoters of the undertaking, to require the question of such compensation to be submitted to arbitration, and thereupon the same shall be so submitted accordingly, in the same manner as in other cases of disputed compensation hereinbefore authorized or required to be submitted to arbitration.

§ 65. *Question to be submitted to the Arbitrators.*—The question to be submitted to the arbitrators in the case last aforesaid shall be, whether the said sum so deposited as aforesaid by the promoters of the undertaking was a sufficient sum, or whether any and what further sum ought to be paid or deposited by them.

§ 66. *If further Sum awarded, Promoters to pay or deposit same within Fourteen Days.*—If the arbitrators shall award that a further sum ought to be paid or deposited by the promoters of the undertaking, they shall pay or deposit, as the case may require, such further sum within fourteen days after the making of such award, or in default thereof, the same may be enforced by attachment, or recovered with costs by action or suit in any of the superior Courts.

§ 67. *Costs of the Arbitration.*—If the arbitrators shall determine that the sum so deposited was sufficient, the costs of and incident to such arbitration, to be determined by the arbitrators, shall be in the discretion of the arbitrators, but if the arbitrators shall determine that a further sum ought to be paid or deposited by the promoters of the undertaking, all the costs of and incident to the arbitration shall be borne by the promoters of the undertaking.

§ 68. *To be settled by Arbitration or Jury, at the Option of the Party claiming Compensation.*—If any party shall be entitled to any compensation in respect of any lands, or of any interest therein, which shall have been taken for or injuriously affected by the execution of the works, and for which the promoters of the undertaking shall not have made satisfaction under the provisions of this or the special Act, or any Act incorporated therewith, and if the compensation claimed in such case shall exceed the sum of fifty pounds, such party may have the same settled either by arbitration or by the verdict of a jury, as he shall think fit; and if such party desire to have the same settled by arbitration, it shall be lawful for him to give notice in writing to the promoters of the undertaking of such his desire, stating in such notice the nature of the interest in such lands in respect of which he claims compensation, and the amount of the compensation so claimed therein; and unless the promoters of the undertaking be willing to pay the amount of compensation so claimed, and shall enter into a written agreement for that purpose within twenty-one days after the receipt of any such notice from any party so entitled, the same shall be settled by arbitration in the manner herein provided; or if the party so entitled as aforesaid desire to have such question of compensation settled by jury, it shall be lawful for him to give notice in writing of such his desire to the promoters of the undertaking, stating such particulars as aforesaid, and unless the promoters of the undertaking be willing to pay the amount of compensation so claimed, and enter into a written agreement for that purpose, they shall, within twenty-one days after the receipt of such notice, issue their warrant to the sheriff to summon a jury for settling the same in the manner herein provided, and in default thereof they shall be liable to pay to the party so entitled as aforesaid the amount of compensation so claimed, and the same may be recovered by him, with costs, by action in any of the superior Courts.

3. *The Railway Clauses Consolidation Act*, 1845. 8 *Vict. cap.* 20.

SETTLEMENT OF DISPUTES BY ARBITRATION.

§ 126. *Appointment of Arbitrators when Questions are to be determined by Arbitration.*—When any dispute authorized or directed by this or the special Act, or any Act incorporated therewith, to be settled by arbitration, shall have arisen, then, unless both parties shall concur in the appointment of a single arbitrator, each party, on the request of the other party, shall nominate and appoint an arbitrator to whom such dispute shall be referred; and every appointment of an arbitrator shall be made on the part of the company, under the hand of the secretary or any two of the directors of the company, and on the part of any other party under the hand of such party, or if such party be a corporation aggregate, under the common seal of such corporation, and such appointment shall be delivered to the arbitrators, and shall be deemed a submission to arbitration on the part of the party by whom the same shall be made; and after any such appointment shall have been made, neither party shall have power to revoke the same without the consent of the other, nor shall the death of either party operate as a revocation; and if for the space of fourteen days after any such dispute shall have arisen, and after a request in writing, in which shall be stated the matters so required to be referred to arbitration, shall have been served by the one party on the other party to appoint an arbitrator, such last-mentioned party fail to appoint such arbitrator, then upon such failure the party making the request, and having himself appointed an arbitrator, may appoint such arbitrator to act on behalf of both parties; and such arbitrator may proceed to hear and determine the matters which shall be in dispute; and in such case the award or determination of such single arbitrator shall be final.

§ 127. *Vacancy of Arbitrator to be supplied.*—If before the matters referred shall be determined any arbitrator appointed by either party die, or become incapable to act, the party by whom such arbitrator was appointed may nominate and appoint in writing some other person to act in his place, and if for the space of seven days after notice in writing from the other party for that purpose he fail to do so, the remaining or other arbitrator may proceed *ex parte;* and every arbitrator so to be substituted as aforesaid shall have the same powers and authorities as were vested in the former arbitrator at the time of such his death or incapacity as aforesaid.

§ 128. *Appointment of Umpire.*—Where more than one arbitrator shall have been appointed, such arbitrators shall, before they enter upon the matters referred to them, nominate and appoint by writing under their hands an umpire to decide on any such matters on which they shall differ, or which shall be referred to him under this or the special Act; and if such umpire shall die, or become incapable to act, they shall forthwith after such death or incapacity appoint another umpire in his place; and the decision of every such umpire on the matters so referred to him shall be final.

§ 129. *Board of Trade empowered to appoint an Umpire, on Neglect of the Arbitrators.*—If in either of the cases aforesaid the said arbitrators shall refuse, or shall for seven days after request of either party to such arbitration neglect to appoint an umpire, the Board of Trade shall, on the application of either party to such arbitration, appoint an umpire; and the decision of such umpire on the matters on which the arbitrators shall differ, or which shall be referred to him under this or the special Act, shall be final.

§ 130. *In case of Death of single Arbitrator the Matter to begin* de novo.—If, where a single arbitrator shall have been appointed, such arbitrator shall die, or become incapable to act, before he shall have made his award, the matters referred to him shall be determined by arbitration, under the provisions of this or the special Act, in the same manner as if such arbitrator had not been appointed.

§ 131. *If either Arbitrator refuse to act, the other to proceed* ex parte.—If, where more than one arbitrator shall have been appointed, either of the arbitrators refuse or for seven days neglect to act, the other arbitrator may proceed *ex parte*, and the decision of such other arbitrator shall be as effectual as if he had been the single arbitrator appointed by both parties.

§ 132. *If Arbitrators fail to make their Award within Twenty-one Days, the Matter to go to the Umpire.*—If, where more than one arbitrator shall have been appointed, and where neither of them shall refuse or neglect to act as aforesaid, such arbitrators shall fail to make their award within twenty-one days after the day on which the last of such arbitrators shall have been appointed, or within such extended time, if any, as shall have been appointed for that purpose by both such arbitrators under their hands, the matter referred to them shall be determined by the umpire to be appointed as aforesaid.

§ 133. *Power for Arbitrators to call for Books, &c.*—The said arbitrators or their umpire may call for the production of any documents in the possession or power of either party which they or he may think necessary for determining the question in dispute, and may examine the parties or their witnesses on oath, and administer the oaths necessary for that purpose.

§ 134. *Arbitrator and Umpire to make Declaration.*—Before any arbitrator or umpire shall enter into the consideration of any matters referred to him, he shall, in the presence of a justice, make and subscribe the following declaration; that is to say,

" I, *A. B.*, do solemnly and sincerely declare, that I will faithfully and honestly, and to the best of my skill and ability, hear and determine the matters referred to me, under the provisions of the Act [*naming the special Act*]. *A. B.*

" Made and subscribed in the presence of ."

And such declaration shall be annexed to the award when made; and if any arbitrator or umpire, having made such declaration, shall wilfully act contrary thereto, he shall be guilty of a misdemeanour.

§ 135. *Costs to be in the Discretion of the Arbitrators.*—Except where by this or the special Act, or any Act incorporated therewith, it shall be otherwise provided, the costs of and attending every such arbitration, to be determined by the arbitrators, shall be in the discretion of the arbitrators.

§ 136. *Submission to Arbitration may be made a Rule of Court.*—The submission to any such arbitration may be made a rule of any of the superior Courts, on the application of either of the parties.

§ 137. *The Award not to be set aside for Matter of Form.*—No award made with respect to any question referred to arbitration under the provisions of this or the special Act shall be set aside for irregularity or error in matter of form.

9. *Forms of Submission to Arbitration.*

1. *Form of Agreement to refer Matters in Difference to Arbitration.*

Articles of agreement made the day of , between , of , of the first part, , of , of the second part.

Whereas several questions, disputes, and controversies have arisen and are subsisting between the said parties respecting certain matters and things, to wit, and otherwise relating to the premises; now these presents witness, that it is hereby covenanted and agreed by and between the said parties hereto, to refer all questions, disputes, and controversies in anywise relating thereto, or touching, or concerning the premises and the accounts relating thereto, to the award, order, arbitration, and determination of , of &c.

And the said parties, for themselves, their heirs, executors, and administrators, do hereby severally and respectively agree well and truly to obey and perform the award of the said , or any two of them, touching the matters and things hereinbefore particularly mentioned, or otherwise concerning the premises; and so as the said award be made in writing, under the hands of the said arbitrators, or any two of them, and ready to be delivered to the said parties or their respective executors or administrators, or such of them respectively as shall desire the same, on or before the day of next ensuing; and that the said arbitrators shall have power to examine the parties and their witnesses on oath or affirmation, and call for all books, papers, deeds, evidences, and writing, relating to the premises as shall be in the possession or power of either of the said parties; and to take the depositions of the parties and their witnesses, in writing, and to be duly signed by them respectively; and that each of the said parties shall at any time before the day which may be appointed for entering upon the arbitration, be at liberty to inspect, peruse, and take copies of all or any of the books, papers, deeds, evidences, and writings in the possession or power of either of the said parties, touching or relating to the matters in reference; and if either of the said parties shall, in the opinion of the arbitrators, or of the majority of them, without good and sufficient cause, delay, or impede, or attempt to delay or impede, the said arbitrators in making the award, the said arbitrators, or the majority of them, may and shall be at liberty to proceed *ex parte*, after days' notice to the party causing the delay or impediment as aforesaid, to be left at his or their last known place of abode or of business; and it is agreed that all proceedings at law or in equity shall be stayed until the said arbitrators, or the majority of them, shall have made their award; and it is agreed that the powers of the arbitrators, under this submission, shall not be defeated or affected by the death of the said parties, or either of them, pending the same, but shall and may be proceeded with, and the matters in controversy determined, in the same manner as if the award had been made and delivered in the lifetime of the party or parties so dying; and it is agreed that the expense of this submission, and of the award to be made thereunder, shall be paid in the following proportions, that is to say: half (or part) by the said , and . half (or part) by the said ; and it is agreed that this submission shall be made a rule of her Majesty's Court of Exchequer at Westminster.

In witness, &c.

2. *Form of Agreement to submit to an Arbitrator to determine the Sum to be paid for Premises taken under the Compulsory Powers of an Act of Parliament.*

Whereas, under the provisions of the Covent Garden Approach and Southwark and Westminster Communication Act, 1857, 20 & 21 Vict. c. 115, the Metropolitan Board of Works, hereinafter called the Board, are entitled to take, and have given due notice in writing, to , of , in the county of , hereinafter called the Claimant, that they require for the purposes of the said Act certain leasehold lands, houses, shops, and tenements, with their appurtenances, situate in the parish of , in the county of , in which the said claimant is interested, which said lands, houses, shops, tenements, and appurtenances, are specifically described in the said notice, and also in the schedule hereunto annexed. And whereas the said claimant has made a certain claim against the Board, but has not agreed with the Board as to the price and compensation to be paid for the value of his estate and interest in the said premises, for his goodwill and loss by removal, and for the fixtures and fittings of and belonging to the said premises, and also for the injury and damage sustained by him on account of the execution of the said Act: and whereas it has been agreed by and between the said Board and the said claimant, that his said claim for compensation shall be forthwith referred to an arbitrator to determine the sum to be paid by the Board to the claimant in respect thereof; and that the arbitration should be conducted by the surveyors of the respective parties, who shall be competent nevertheless to give evidence as witnesses, without counsel on either side: now these presents witness that the Board and the claimant, in pursuance of the said Act and of the said agreement, do hereby appoint , of , in the county of , architect and surveyor, to be an arbitrator, to settle and determine the sum to be paid by the Board to the claimant, according to the said notice, and according to the said Act.

Dated this day of , in the year of our Lord one thousand eight hundred and .

Schedule above referred to.

Name, Residence, Business, or Description of the person claiming.	Number, Situation, and Description of the Property.	The estate, share, or interest claimed, whether freehold or leasehold; if freehold, whether absolutely entitled or in mortgage, &c; if leasehold, the Landlord's name and residence, the terms of years unexpired, the rent reserved, the premium paid, and any special Covenants or circumstances.	Names of Occupiers, whether Lessees or Quarterly or other Tenants; the rents paid, the terms of years, the periods when the tenancies commenced, and premiums paid.	Particulars of Amount claimed, specifying separately the proportion claimed for value of estate or interest and that claimed for compensation for removal, &c.

(Signed)

Witness to the Signature of
the above-named

3. *Form of Appointment of an Umpire by Arbitrators.*

We, the within-named and , do hereby nominate and appoint , of , to be the umpire between us in the matters within referred; on condition that he do within days from the date hereof, by some writing under his hand, accept the umpirage.

As witness our hands, &c.

4. *Form of Enlargement, by the Parties, of Time for making Award.*

Know all men by these presents, that we, the within-named and , for ourselves severally and respectively, and for our several and respective heirs, executors, and administrators, do hereby give, grant, and allow unto the within-named further time for making their award of and concerning the several matters within referred to them, until the day of now next ensuing

In witness, &c.

5. *Form of Notice to produce Papers, &c.*

I do hereby give you notice to produce before , of , to whom all matters in difference between the above-named parties have been referred, on the day of next ensuing, at o'clock in the morning (afternoon), all books, deeds, papers, evidences, writings, vouchers, letters, or other documents whatsoever, relating to the matters in difference between the said parties so referred as aforesaid, now in your custody, power, or possession, and especially a certain book, &c. Dated this day of .

To

VI.

THE RELATION OF ARCHITECTS AND SURVEYORS TO EMPLOYERS.

In every trade or profession it is important that the usages of it should be understood by the respective parties to a transaction; for if there be a general usage applicable to a particular trade or profession, persons employing one in such trade or profession will be taken to have dealt with him according to that usage.[1]

It is not a usual practice for architects to make out the bills of particulars or quantities for work to be done. Architects of the highest class never do so, and indeed the practice is reprobated in the profession. The usual course is for the person who makes out such bills to do so in detail; so that builders or contractors tendering for the execution of the works may be enabled to judge, not only of the gross quantity of materials to be used, but also of the quantity of labour to be employed in preparing the materials, the cost of which is often very much in excess of the value or cost of the materials before their arrival at the spot where they are to be used. In the case of Kemp *v.* Rose, it was held to have been established by the evidence before the Court that it is neither the usual nor a safe course for the architect to prepare bills of particulars or quantities of the works to be executed; in consequence of its having been done by the architect in that case, the statement which he furnished was held to be of the essence of the contract; and it was also held that the contractor was not bound by the quantities of work referred to in the written contract as the quantities appearing in the drawings.[2] Where, however, an architect does himself supply a bill of quantities, he may, under certain circumstances, be personally liable for any loss occurring to a contractor in consequence of an error on his part in the particulars specified in the bill. In illustration of this liability the following case may be cited:—The plaintiff sued the defendant, an architect, to recover damages for supplying to the plaintiff an inaccurate statement of the quantities of work and materials required for the erection of a building which the plaintiff contracted to erect. The defendant advertised for tenders for the erection of a Baptist chapel, stating that the plans and specifications could be seen, and that the quantities of work and materials would be furnished. The plaintiff obtained from the defendant's office a table of such quantities, headed by a statement that it was to be paid for by the successful competitor. From this table the plaintiff calculated his tender, which was accepted, and according to the plaintiff's evidence, but contradicted by the defendant, the latter expressly stated to the plaintiff that he was responsible to him for the quantities. The defendant, however, admitted that in the plaintiff's absence he (the defendant) on one occasion assured the chapel committee that the quantities were correct and that he guaranteed them. There was a second claim made by the plaintiff in respect of a contract for building a gentleman's villa, the bill of quantities being headed "2 per cent. for quantities." For the plaintiff, it was contended, that independently of the computations there was an implied undertaking in law that the bill of quantities paid for by the plaintiff should be reasonably correct. And for the defendant it was contended that there was no contract between the architect and the builder; that the committee had stipulated with the plaintiff that he should pay the architect, and that the architect was not liable to the builder for any inaccuracy in the quantities. Mr. Justice Byles, in summing up the evidence, directed the jury that the defendant had stipulated that the plaintiff should pay him for the calculation of the quantities, and having been paid for them by him was liable to compensate him if the bill were not reasonably correct, and the jury thereupon found for the plaintiff.[1]

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[1] Sewell *v.* Corp, 1 C. and P. 392.

[2] Kemp *v.* Rose, 4 Jur. (N. S.)

It is also said that if a surveyor make an estimate which turns out to be incorrect to a considerable amount, through his omitting to examine the ground for the foundation of the work, he is not entitled to recover anything for his plans, specifications, or estimates made for that work.[2]

When an architect, or other qualified person, enters into competition with others in submitting designs and estimates for works, and his plans are accepted, if his designs are afterwards entrusted to others to be carried into execution, he will be entitled to be compensated for the trouble and expense he was put to in respect of his designs. So also, if a builder or carpenter prepares a tender for the execution of works, which is accepted, and the execution of the works is afterwards entrusted to another. To give an architect or builder under such circumstances a legal right to recover compensation for the services rendered, there must however be an express or implied contract or retainer to do the work; for if such be wanting, the demand cannot be enforced. In all competitions the terms of the announcement inviting plans or tenders should be carefully examined, in order to ascertain that the conditions are expressed in such terms as will amount to a contract, either express or implied, between the persons inviting the competition and the successful competitor. If this be not done, it may turn out that the labour bestowed is entirely thrown away, so far as any benefit is likely to accrue to the labourer, who at the last may find that, though considered worthy in other respects, he is not considered worthy of his hire.

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[1] Bolt v. Thomas, MS.

[2] Moneypenny v. Hartland, 1 C. and P. 352, 2 C. and P. 378.

The following case bears incidentally upon the subject here treated of:—A prize had been offered for the best plan and model of a machine for loading colliers and barges, and plans and models intended for the competition were to be sent in by a certain day. A person who had made a plan and constructed a model, with the intention of becoming a competitor, sent the plan and model by a railway, addressed to the parties; but through negligence they did not arrive at their destination until after the appointed day. Upon this state of facts, it seems that the damage arising from the non-delivery of the plan and model was to be measured by the value of labour and materials expended in making the plan and model, and not by the chance of obtaining the prize, as the latter was considered too remote a ground for assessing damages.[1]

VII.

LIABILITY OF CONTRACTORS FOR DAMAGE.

By statute 3 Vict. c. 55, § 5, it was declared, that no act of the Commissioners of the Dartford Creeks should be valid, unless made or done at a meeting under the Act; and that all the powers of the Act shall be executed by a majority of the commissioners present at a meeting, not less than three being present. By another section of the same Act, the commissioners were to be sued in the name of their clerk. The commissioners passed resolutions to the effect that their engineer should prepare specifications, with a view to certain works, and that tenders should be invited for the execution of the works. Afterwards, at a meeting at which seven

v. Ambergate, &c., Railway Company, 15 Jur. 448.

commissioners were present, they unanimously agreed to accept a tender sent in. The contract was accordingly prepared by the secretary of the commissioners; but three of them only were named in it, and by none of those three was it signed. The person whose tender was accepted performed the works specified in the contract, (*inter alia*) a bank, which he erected of insufficient materials. Water having been prematurely let in, the bank sank, and caused damage to an adjoining orchard. An action on the case, for the damage so sustained, having been brought against the commissioners, in the name of their clerk, a verdict for the plaintiff was found, and a rule *nisi* obtained for a nonsuit, pursuant to leave reserved, or for a new trial, on the ground of misdirection; it was held on the hearing of the rule, that the contract agreed upon, as above mentioned, at a regular meeting, was made in execution of their office by the commissioners, and that work done under it may be work done by them as commissioners; so that the defendant might be properly sued as their representative, assuming that in other respects they were liable; but it was held that they were not so liable. The Court said, that it was perfectly clear that in an ordinary case a contractor to do works of the nature referred to is not to be considered as a servant, but as a person carrying on an independent business, such as the commissioners were fully justified in employing to perform works which they could not execute for themselves, and who was known to all the world as performing for them. The bank, which failed, and which was the cause of the damage, being part of the works specified and described in the contract, and being unskilfully constructed, the contractor, the Court held, was liable, and not the commissioners. The rule was accordingly made absolute for a nonsuit.[1]

Another statute, the 11 & 12 Vict. c. 112, § 128, enacts that "no matter or thing done by the commissioners, or by any clerk, surveyor, or other person acting under their direction, shall, if the matter or thing were done *bonâ fide* for the purpose of executing that act, subject them primally to any action, liability, claim or demand whatsoever; and any expense incurred by such commissioners, clerk, surveyor, or person acting as last aforesaid, shall be borne and repaid out of the funds under the control of the commissioners." An action having been brought for an injury to a house, caused by works executed by a contractor, it was held that the words above quoted absolved from liability to an action persons who, acting under the direction of the commissioners, did some matter or thing *bonâ fide*, which but for the enactment would subject them to an action, and that therefore a contractor who, acting *bonâ fide*, and under the control of the commissioners, executed works which caused injury to a house, was not liable to an action, but that the person injured must bring his action against the commissioners in the name of their clerk, in pursuance of the 125th section of the Act.[1]

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[1] Allen *v.* Hayward, 15 L. J. Q. B. 99; 10 Jur. 92.

The following case illustrates the liability of sub-contractors:—The plaintiff having contracted to repair a machine, employed the defendant to make part of the machinery, a fire-box, but did not inform him of his contract to repair the machine. The defendant failed to make the fire-box within the time specified; but the interval between that time and the time fixed for the completion of the plaintiff's contract for the repair of the machine was sufficient to have enabled him to have got a fire-box made elsewhere. The plaintiff, for want of the fire-box, failed to complete his contract for the repair of the machine, and being sued thereon, paid damages. He thereupon brought his action against the defendant for breach of his contract, and it was held that the damages paid by the plaintiff were not recoverable by him from the defendant as the result of his breach of contract.[2]

The extent to which a contractor may be liable for insufficient workmanship, is illustrated by the following case:—A person employed another to make bricks for him at a stipulated price per thousand, and some of the bricks made under the contract were so badly made, that they were good for nothing. The employer in such case was held to be entitled to make a deduction for those badly-made bricks out of the stipulated price; and he may make such deduction in an action brought by the maker of the bricks for the stipulated price. If, however, the bricks be badly made in a trifling degree only, so as merely to be less valuable than they otherwise would have been, in an action by the maker for the stipulated price, the employer will not be entitled to make any deduction on this account.[3]

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[1] Ward *v.* Lee, 7 El. and Bl. 426; 26 L. J. (N. S.) Q. B. 142; 3 Jur. (N. S.) 557.

[2] Portman v. Middleton, 27 L. J. C. P. 231; 4 Jur. (N. S.) 689.

[3] Pardow *v.* Webb, 1 Car. and M. 531.

VIII.

LIABILITY OF MASTERS FOR INJURIES TO SERVANTS IN THE COURSE OF THEIR EMPLOYMENT, AND OTHER PERSONS.

THE next subject to be treated of is the liability of employers for injuries resulting to their servants whilst in the ordinary course of employment in their masters' service, and for injuries to others caused by the acts of such servants; and also to make compensation in an action for damages to the wife, husband, parent, and child of a person killed through a wrongful act, neglect, or default.

1. *Injuries resulting to Servants and Others.*

The rule of law is, that for the acts of a man's own domestic servants, in the ordinary course of their employment, the master is responsible; and this rule extends to other servants whom the master selects and appoints to do any work, or superintend any business, although the servants be not in the immediate employ or under the superintendence of the master. As in the case where the owner of a mine employs a manager to superintend the working of the mine and to hire workmen, and he pays them on behalf of the owner. In such a case, the under-workmen are the servants of the owner of the mine, who is answerable for their default; for their acts are the acts of the manager, and the act of the manager is the act of the principal. This rule, however, does not hold good in its application to the case of sub-contractors, for generally a sub-contractor is not deemed in law the servant of the person employing him, so as to render the latter liable for any accident occasioned by his misconduct or negligence. Again, the rule is, that though a master is answerable for damage occasioned by his servants' negligence in doing a lawful act in the course of his service, he is not so liable if the act is in itself unlawful, and is not proved to have been authorized by the master.[1]

These are the general principles which determine the liability of a master for injuries to others resulting from the acts of his servants whilst employed in the master's business; and the following are illustrations of their application to particular cases.

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[1] Lyons *v.* Martin, 8 A. and E. 512; 3 Nev. and P. 509.

Where a master builder personally interferes, and directs his workmen to make a scaffolding out of poles which he knows to be unsound, he is liable to make compensation if the scaffolding gives way, and a workman upon it in his employ who has notice of the unsoundness is injured thereby.[1] So also, if a servant is required in the course of his employment to ascend a ladder which is wholly unfit and unsafe for use, and receives an injury. But it would seem that if the servant had the means of knowing that the ladder was unsafe, it would have been a defence to the action ;[2] in such a case, however, the defendant should plead such means and knowledge.

A master is not generally held responsible to one servant for an injury occasioned to such servant by the negligence of a fellow-servant whilst they are employed in the same service ; but this rule does not hold good where the person causing the injury is not a person of ordinary care and skill in the particular employment ;[3] and, moreover, it is subject to this further qualification, that the master uses reasonable care in the selection of his servant.[4] He is, however, not bound to warrant the competency of his servants ; and any servant who apprehends danger to himself in doing the work required of him, may decline the service.[5]

In a more recent case, upon an appeal from a Scotch Court, it was held by the House of Lords that where workmen are engaged in a common work, and an injury happens to one of them through the negligence of another engaged in the same work, the master is not responsible, unless the servant causing the injury was incompetent to discharge his duty.[6]

Generally, it may be said that a master is bound to take all reasonable precautions to secure the safety of his workmen, more especially if the work is of a dangerous character, and the persons engaged in it are proverbially reckless.[7] If, however, the person injured has himself contributed to the accident, he cannot recover ; neither if he be killed could his representative recover under the 9 & 10 Vict. c. 93.[8]

[1] Roberts *v.* Smith, 2 H. and N. 213; 26 L. J. Exch. Ch. 319; 3 Jur. (N. S.) 469. See also Ormond *v.* Holland, 1 E. B. & E. 102.

[2] Williams *v.* Clough, 3 H. and N. 258.

[3] Wiggett *v.* Fox, 11 Exch. Rep 832; 2 Jur. (N.S,) 955; 25 L. J. Exch. 188.

[4] Tarrant *v.* Webb, 18 C. B. 787; 25 L. J. C. P. 261.

[5] Wiggett *v* Fox, *supra*.

[6] Barton's Hill Coal Company *v.* Reid, 3 Macq. H. L. Cas. 266; 4 Jur. (N. S.) 767.

[7] Paterson *v.* Wallace, 1 Macq. H. L. Cas. 748.

[8] Griffiths *v.* Gidlow, 3 H. and N.

In Paterson *v.* Wallace, Cranworth, *C.*, said:—"It is the master's duty to be careful that his servant is not induced to work under a notion that tackle or machinery is stanch and secure, while, in fact, the master knows, or ought to know, that it is not so; and if from any negligence in this respect damage arises, the master is responsible." Upon which, Pollock, *C. B.*, in another case, observes,—"That is merely a declaration of the Lord Chancellor in a Scotch case, not a decision of the House of Lords."[1]

In that case it was held by the Court of Exchequer that a servant has no right of action against his master for injury done to him in the course of his employ by the acts of his fellow-servant; and if killed, no action under the 9 and 10 Vict. c. 93, can be maintained by his representative; but it would seem that these rules do not hold where the master has personally interfered to direct the act which caused the injury or death.

The case of Addie *v.* Lennan, decided by the House of Lords, may be instanced in further illustration of this principle. That case was an appeal from the Second Division of the Court of Session in Scotland, and it appeared that the appellants, Messrs. Addie and Miller, were coal-masters at Rosehall and Glasgow, and the respondent was in their service as reddsman or labourer. He brought an action against his masters in the Sheriff's Court of the county of Lanark to recover compensation for injuries he had sustained through the alleged negligence of the appellants or their managers, by whose neglect a stone had fallen upon him while employed in repairing a road in the mine, which stone he contended ought to have been properly secured before he was sent to work there. The appellants denied the negligence and their liability. The sheriff-substitute before whom the case was heard decided that the respondent had failed in making out the alleged negligence on the part of the appellants or their managers. The sheriff, however, reversed that decision, being of opinion that there had been such negligence proved on the part of the overseers of the mine as would render the appellants liable. The appellants then took the case before the Court of Session, contending that they were not liable to the respondent for injuries sustained by him through the negligence of a fellow-servant, and that Court held that the appellants were liable for such negligence. That decision was appealed from, and their lordships reversed the decision of the Court below, holding that the law both of England and Scotland was clear, that a master was not liable to his servant for injuries sustained by him in consequence of the negligence of a fellow-servant whom the master believed to be a competent person.

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[1] Vose *v.* Lancashire and Yorkshire Railway Company, 2 H. and N. 728, 732; see also Roberts *v.* Smith, 2 H. and N. 213.

Negligence is of the essence of the liability of a master for injury occasioned to his servants in the course of their employment; and a master is bound to take all reasonable precautions to secure the safety of his workmen.[1] The rule of law is, that a master is not in general responsible to his servant for injury occasioned by the negligence of a fellow-servant in the course of their common employment; and this rule applies equally to the case of a stranger who is injured whilst voluntarily assisting the servants in their work;[2] neither is a master liable for injury occasioned to his servant in the course of his ordinary employment, if such injury be not occasioned by the personal negligence of the master.

Again, if a servant meets with an injury while in the actual use of an instrument or machine, of the nature of which he is as much aware as his master, and the use of which is the approximate cause of the injury, he cannot, at all events if the evidence is consistent with his own negligence in the use of it being the real cause, nor in the case of his dying from the injury, can his representative under the 9 & 10 Vict. c. 93, recover against his master, there being no evidence that the injury arose through the personal negligence of the master. And this even though the master have in use in his works an instrument or machine less safe than some other which is in general use for the particular purpose.[3]

The following case further illustrates this subject:—A declaration against a builder alleged that he knowingly, carelessly, and negligently erected a hoarding in a street, and left a machine in a position in which it was likely to cause danger to the workmen, and that a cart accidentally ran against the hoarding and knocked down the machine against the plaintiff. The hoarding had been erected by the builder, and it projected too far into the street, but sufficient room was left for carts to pass. The machine which was the immediate cause of the injury, was placed inside the hoarding and close to it, and a cart in passing struck the hoarding, and knocked down the machine against the plaintiff, a workman employed by the builder. The plaintiff had previously made some

[1] Bryden v. Stewart, 2 Macq. H. L. Cas. 30.

[2] Degg v. Midland Railway Company, 1 H. and N. 773; 26 L. J. Exch. 171; 3 Jur. (N. S.) 395.

[3] Dynen v. Leach, 26 L. J. Exch. 221.

complaint of the position of the machine to his master, but voluntarily continued to work, though the machine was not removed; and it was held that this state of facts afforded no evidence to go to the jury of the builder's liability for the injury.[1]

Again, an owner of land having a private road for the use of persons coming to his house, gave permission to a person engaged in building on the land to place materials upon the road. The builder accordingly placed a quantity of slates on the road, but in such a manner that a person using the road sustained damage; and he was held liable to an action for the damage.[2]

In an action for damage occasioned by negligence, a material question is whether or not the person injured might not have escaped the damage by ordinary care on his own part; the person causing the damage is not excused merely because the injured person knew that some danger existed through the particular neglect, and voluntarily incurred the danger. In such a case, the amount of danger, and the circumstances which led to its being incurred, will be for the consideration of the jury. Therefore, where Commissioners of Sewers had made a dangerous trench in the only outlet from a mews, putting up no fence, and leaving only a narrow passage, on which they had heaped rubbish, and a cabman in the exercise of his calling attempted to lead his horse out over the rubbish, and the horse fell, and was killed, it was held that he was not disentitled to recover.[3] Moreover, it will be no answer to an action for negligence, that part of the injurious consequences would not have occurred had the injured person not been guilty of some negligence;[4] and a plaintiff is not precluded from recovering for an injury negligently done by the defendant, by the fact, that he himself has been guilty of unlawful or negligent conduct, unless he might by the exercise of ordinary care at the time have avoided the injury.[5] The following case further illustrates this principle.

A workman employed with others in sinking a pit, being at the bottom, was injured by the fall of a tub of water, which was being drawn up by machinery. Evidence was given that the tackle was imperfect, not being pulled with a safe hook, and that a "jiddy" should have been used. He worked with the hook, making no complaint of it; a jiddy had been provided by the master, who had directed that it should be used when earth was raised. In his master's presence, he had complained that the jiddy was not used for water, and the master was at the workings several times each day. Upon this state of things, it was held that the master was not liable for the injury; first, because assuming the injury to have arisen from the defect of the hook, the workman himself voluntarily used it, and it was not shown that the injury was not caused by his own rashness; secondly, because, assuming it to have arisen from the neglect to use the jiddy, the master, having provided a proper apparatus, was not liable for the neglect of the fellow-workmen in omitting to use it.[1]

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[1] Assop *v.* Yates, 2 H. and N. 768; 27 L. J. Exch. 156.

[2] Corby *v.* Hill, 4 C. B. 576.

[3] Clayards *v.* Dethick, 12 Q. B. 439.

[4] Greenland *v.* Chaplin, 19 L. J. Exch. 293; 5 Exch. Rep. 243.

[5] Davis *v.* Man, 12 L. J. 10; Exch. 10 Mee. and W. 546.

It may sometimes happen that though there may be no negligence on the part of the person injured, such person may nevertheless not be entitled to maintain an action for the injury to himself. As, where the plaintiff, a child of five years old, was under the care of his grandmother, who purchased a ticket for him and another for herself, to go from A to B on the defendant's railway. While crossing the line at A to be ready for their train, they were both knocked down and injured by another train. The accident was partly owing to the defendant's negligence, and partly to such negligence on the part of the grandmother as would have disentitled her to recover damages from the defendants for the injury to herself. Upon an application to reverse the decision of the Court of Queen's Bench, making absolute a rule for a nonsuit,[2] it was held by the Court of Exchequer Chamber, that the plaintiff not being able to take care of himself, and being under his grandmother's care, there was such an identification between the grandmother and the plaintiff, that by reason of her negligence, the plaintiff was unable to maintain an action for the injury to himself.[3]

A master is civilly responsible for the negligence of his servant acting in the course of his employment, but not for an act of wilful negligence done out of the scope of his employment. Where a common labourer had been employed to clean out a drain by the job, and in the course of doing so, took up part of an adjoining highway, and replaced it in an improper manner and with insufficient materials, in consequence whereof the horse of a person passing along the highway was injured, it was held that the labourer was not an independent contractor, but was acting as the servant and under the control of his employer, who was consequently responsible for the injury.[1] Where, however, work is done for a company under a contract (parol or otherwise), the company is not responsible for injury resulting to a third person from the negligent manner of doing the work, though they employ their own surveyor to superintend it and to direct what shall be done.[2] So also if a person employs another to do a lawful act, and he in doing it commits a public nuisance whereby an injury is occasioned to a third person.[3]

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[1] Griffiths v. Gidlow, 3 H. and N. 648; 27 L. J. Exch. 404.

[2] Waite v. the North Eastern Railway Company, 27 L. J. (N. S.), Q. B. 417.

[3] Ib. 28 L. J. (N. S.) Q. B. 258; 5 Jur. (N. S.) 936.

So where an accident occurred whilst the reins of a cart were entrusted to a stranger, who was riding with the owner's servant, the owner was held to be liable for the damage though the stranger was not in his service.[4] Again, if a servant driving his master's cart, on his master's business, make a detour from the direct road for some purpose of his own, the master will be liable to damages for any injury occasioned by his negligent driving while so out of the road; but not so if the servant take his master's cart without leave, at a time when it is not wanted for the purposes of business, and drive it about solely for his own purposes.[5]

It would seem that the owner of property who enters into a contract for its repair, and parts with all control over the conduct of such repair, is not liable for any mischief which the contractor may occasion in the progress of the work by negligently depositing materials in the highway in the neighbourhood of the property, or other acts of a like nature. Where, however, the owner of premises caused a drain to be made on them, and the soil removed was placed on the highway near the spot where the workmen were employed by the contractor, and an action on the case being brought against the owner by a person who was thrown out of his cart in consequence of its passing over the heap and so injured; it was held that it was not necessary to render the owner liable that the contractor should be his servant; and that he could not complain that the judge on the trial directed the jury to consider, on the evidence, whether he had parted with all control over the making of the drain and the removal of the soil.[6]

A railway company entered into an agreement with A to construct a portion of their line. A contracted with B, who resided in the county, to erect a bridge on the line. B had in his employment C, who acted as his general servant, and as a surveyor, and had the management of B's business in London, for which he received an annual salary. B entered into a contract with C, by which C agreed for 40*l.* to erect a scaffold which had become necessary for the building of the bridge; but it was agreed that B was to provide the requisite materials, and lamps, and other lights. The scaffold was erected upon the footway by C's workmen, and a portion of it improperly projected, and owing to that, and the want of sufficient light, D fell over it at night, and was injured. After the accident, B caused other lights to be placed near the spot to prevent a recurrence of similar accidents. An action being brought by D for the injury he sustained, it was held that it was not maintainable against B, but that D's remedy lay against C, the foreman of B.[1]

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[1] Sadler v. Henlock, 4 El. and Bl. 570; 24 L. J. R. Q. B. 138; 1 Jur. (N. S.) 677.

[2] Steel v. South Eastern Railway Company, 16 C. B. 550.

[3] Peachy v. Rowland, 22 L. J. C. P. 81; 17 Jur. 764.

[4] Booth v. Muster, 7 C. and P. 66.

[5] Joel v. Morison, 6 C. and P. 501.

[6] Burgess v. Gray, 14 L. J. C. P. 184.

The following case is an illustration of the general rule as to non-liability for the acts of a sub-contractor. The defendant, a builder, was employed by the committee of a club to execute certain alterations at the club-house, including the preparation and fixing of gas-fittings. He made a sub-contract with a gas-fitter to execute this part of the work; and in the course of the execution of the work, through the negligence of the sub-contractor, the gas exploded, and injured the plaintiff. An action on the case having been brought for the injury, it appeared at the trial that the specification included various works to be done, and amongst the rest some gas-fittings. For this latter purpose the defendant employed a person who had been for many years extensively engaged as a gas-fitter, and who, while the work was in progress, received a fresh order from the club through the plaintiff, who was their butler and steward, for the construction of a gas-pipe and burner, not mentioned in the original specification with the defendant, and which he constructed accordingly without any notice to or communication with the defendant on the subject, who, however, either by himself or his servants superintended the works generally. On the occasion of a trial of all the gas-works which had been set up, an explosion of gas from this new pipe took place, in consequence of the negligence of one of the gas-fitter's workmen, by which the plaintiff and his wife were severely injured. On this evidence the plaintiff had a verdict, with leave reserved to the defendant to move to enter a non-suit, on the ground that he was not liable, and that the plaintiff's right of action lay either against the gas-fitter, or the workman by whose immediate negligence the injury had been occasioned. A rule having been obtained either to enter a non-suit, or for a new trial, or in arrest of judgment, it was held that the injured person could not maintain any action against the original contractor:—"If a man," said Alderson, *B.*, "does an injurious act, either by himself or his servant, he is responsible for it, and the whole question resolves itself into this—Was the gas-fitter the servant of the defendant? and that comes to this—Is a sub-contractor to be considered a servant? I think he is not; and this rule ought, therefore, to be made absolute."[1]

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[1] Knight *v.* Fox and Henderson, 5 Exch. 721; 20 L. J. Exch. 9; Overton *v.* Freeman, 15 Jur. 65.

2. *Damages in case of Death of the Person injured.*

By Lord Campbell's Act it is provided, that whensoever the death of a person shall be caused by wrongful act, neglect, or default, and the act, neglect, or default is such as would (if death had not ensued) have entitled the party injured to maintain an action, and recover damages in respect thereof, then, and in every such case, the person who would have been liable if death had not ensued shall be liable to an action for damages, notwithstanding the death of the person injured, and although the death shall have been caused under such circumstances as amount in law to a felony.[2] The action shall be for the benefit of the wife, husband, parent, and child of the person whose death shall have been caused; and shall be brought in the name of the executor or administrator of the deceased; and the jury may give such damages as they may think proportioned to the injury resulting from the death to the parties for whom and for whose benefit the action shall be brought; to be divided amongst them (after deducting costs) in such shares as the jury, by their verdict, shall find and direct.[3]

Not more than one action lies under the Act in respect of the same subject matter of complaint; and every action must be commenced within twelve calendar months after the death of the deceased person.[4] It is further required that the plaintiff on the record shall, together with the declaration, deliver to the defendant or his attorney a full particular of the person or persons for whom, and on whose behalf the action shall be brought, and of the nature of the claim in respect of which damages shall be sought to be recovered.[5]

The action must be brought in the name of the executor or administrator of the deceased, and therefore the will of the deceased must be legally proved, or letters of administration must have been granted to the party bringing the action. In a case in which a married woman was killed, leaving a husband (a mariner absent at sea on a voyage which was to endure for three years), a mother and an infant child, the Court of Probate granted limited administration to the mother of the deceased in the absence of the husband, for the sole purpose of enabling her to bring the action before the expiration of the twelve calendar months limited by the Act.[1]

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[1] Rapson *v.* Cubit, 9 Mee. and W. 710; 1 Car. and M. 64; 6 Jur. 606.

[2] 9 and 10 Vict. c. 93, § 1.

[3] Ib. § 2.

[4] Ib. c. 93, § 3.

[5] Ib. § 4.

The rule with respect to actions under the 9 & 10 Vict. c. 93, is the same as if the injured person himself had brought the action. Therefore, if in an action where the death is alleged to have been caused by the negligence of the defendant's servants, it be shown that the deceased, by his own negligence or carelessness, contributed to the accident, the defendant would be entitled to a verdict.[2]

In a more recent case, it has been held that an action is not maintainable by the representative of a deceased workman against his master, if the deceased's own negligence materially contributed to the injury of which he died, even though the master himself be guilty of personal negligence. Thus after the passing of the 18 & 19 Vict. c. 108, special rules were framed and approved for the regulation of a coal-mine, of which the defendant was the proprietor and manager. By one of these rules for the direction of the enginemen and banksmen, every evening before any one descended the shaft, the cage by which they were let down was to be twice run slowly up and down loaded, in order to test the sufficiency of the rope and tackling. This rule was habitually neglected for many weeks to the defendant's knowledge, and even the rope by which the cage was suspended, being before in good repair, was (as it was afterwards discovered) injured by an accidental fire in the mine. The next morning, certain miners employed by the defendant in the colliery, all of whom knew of the rule for testing the rope and of its being habitually violated, presented themselves at the pit to be let down to work, and there not having been any previous testing of the rope, &c., were told by the banksman that they had better examine the rope before they went down; they, however, did not do so, but got immediately into the cage, and the rope breaking as they descended they were all killed. An action having been brought by the representative of one of the miners against the proprietor and manager, it was held not to be maintainable, inasmuch as the deceased's own negligence had contributed to the accident. The Court, however, intimated an opinion that but for the deceased's own negligence, the defendant, notwithstanding the deceased and the banksman were both employed in the colliery by the defendant as fellow-labourers, would have been liable by reason of his personal negligence in neglecting the rule and keeping in his employ a banksman who, he knew, habitually violated it.[1]

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[1] *In re* the goods of Williams, deceased, MS.

[2] Tucker *v.* Chaplin, 2 C. and K. 730.

In a case where a master builder contracted to erect a building, and employed bricklayers for the purpose, and it being the master's duty to provide the proper scaffolding, in his absence entrusted the preparation of it to his foreman, with the assistance of his own workmen, who used an unsound ledger-pole in its construction, in consequence of which the scaffold broke, and one of the bricklayers was killed; it was held in the absence of proof that the foreman was a person deficient in skill, or an improper person to employ for the purpose, that no action was maintainable under the 9 & 10 Vict. c. 93, by the representative of the person killed against the common employer;[2] for a master is not in general liable to his servant for damage resulting from the negligence of a fellow-servant. In this case the unsoundness of the ledger-pole had been previously pointed out to the foreman.

Persons executing works are liable in respect of injuries occasioned by their negligence in not having properly fenced in dangerous parts of the works or places near to which the public have a right to pass; for such works are a public nuisance, and an individual injury arising from such a nuisance is the subject-matter of an action to the person aggrieved, which is a doctrine as old as any known to the Common Law of England. Therefore if a person in the course of building a house on land abutting on a public footway, excavates an area, which, either by his own negligence or by the negligence of his workpeople, is left unfenced, so that a person lawfully passing along the way, in a dark night, without any negligence or default, falls in and is killed, is liable to an action on the part of the representative of the deceased, under the 9 & 10 Vict. c. 93.[3] Such liability, however, would not attach to the owner or occupier of land, along which a right-of-way exists, who leaves unprotected an excavation or reservoir of water, for the injury or death of a person falling into it in the dark, in consequence of his straying out of the way by mistake.[1] The true test of legal liability in such cases is whether the works or excavations be substantially adjoining the public way, along which the public have a right to pass. If they be, liability will attach; if they be not, and the person come to misfortune by reason of his trespassing upon the adjoining land, the owner of the land is exonerated. Generally, it may be said that if a person employs another to do that which would be in itself a public nuisance, and injury to a third person is thereby occasioned, the employer would be liable for the injury.[2] The following is a further illustration of this principle.

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[1] Senior *v.* Ward, 28 L. J. (N. S.) Q. B. 139.

[2] Wigmore *v.* Jay, 5 Exch. 354; 19 L. J. Exch. 296, 300; 14 Jur. 837.

[3] Barnes *v.* Ward, 9 C. B. 392; 19 L. J. C. P. 195; 14 Jur. 334.

A declaration alleged that the defendant was in the occupation of a brewery and office, and a passage leading thereto from the public street, used by the defendant for the reception of customers in his trade of a brewer, which passage was the usual means of access from the office to the public street; yet that the defendant wrongfully and negligently permitted a trap-door in the floor of the passage to be and remain open without being properly guarded and lighted; and that the wife of the plaintiff, who had been at the office as a customer of defendant, and otherwise in defendant's business, and was lawfully passing along the passage on her return from the office to the street, fell through the aperture caused by the trap-door being and remaining open and not properly guarded and lighted, whereby she was killed. On demurrer to this declaration it was held that the plaintiff's right to sue as administrator under 9 and 10 Vict. c. 93 sufficiently appeared, without express allegation of pecuniary damage, and that the duty of defendant, and breach of that duty, sufficiently appeared by the declaration.[3]

In an action founded on Lord Campbell's Act, for injury resulting from the death of the party, legal liability alone is not the test of injury in respect of which damages may be recovered; but the reasonable expectation of pecuniary advantage by the relative remaining alive, may be taken into account by the jury; and damages may be given in respect of that expectation being disappointed, and the probable pecuniary loss thereby occasioned. Therefore in an action by a father for injury resulting from the death of his son, through the negligence of the servants of a railway company, it appeared that the son, who was twenty-seven years of age, and unmarried, but living away from his parents, had for the last seven or eight years been in the habit of visiting them once a fortnight, and of making them on these occasions presents of tea, sugar, and other provisions, besides money, amounting in the whole to about 20*l.* a year; it was held that the jury were warranted in inferring that the father had such a reasonable expectation of pecuniary benefit from the continuance of his son's life, as to entitle him to recover damages under the statute; but that it was not competent to the jury to award him compensation for the expenses incurred by him for his son's funeral, or for family mourning.[1]

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[1] Hardcastle *v.* South Yorkshire Railway Company, 1 H. and N. 67; 28 L. J. (N. S.) Exch. 139.

[2] Overton *v.* Freeman, 4 Car. and K. 49; 21 L. J. C. P. 52; 16 Jur. 65.

[3] Chapman *v.* Rothwell, 1 E. B. & E.

In order to maintain an action under Lord Campbell's Act, *actual* damage must have accrued from the death of the deceased. In an action by a father, a working mason, under the statute, as administrator of his son, a boy of fourteen years of age, evidence was given that the deceased had shortly before the accident which caused his death, been earning 4*s.* a week. The jury having found a verdict for the plaintiff, damages 20*l.*, a rule was obtained to set aside the verdict and enter it for the defendant, or to reduce the damages to a nominal amount, on the ground that no such loss or damage was shown to have resulted from the death of the intestate as would entitle the plaintiff to maintain the action, or to recover more than nominal damages if the action lay; it was held that there was evidence to go to the jury of a pecuniary loss to the plaintiff from the death of his son; and that to maintain an action under the statute, actual loss must be proved. The mere proof of the death and relationship of the parties will not entitle a plaintiff to a verdict with nominal damages.[2]

IX.

DIFFERENCES BETWEEN MASTERS AND WORKMEN.

ALL complaints, differences, and disputes which shall happen or arise between masters and artificers, handicraftsmen, miners, colliers, keelmen, pitmen, glassmen, potters, and other labourers (which latter designation comprehends all workmen in other trades besides the above),[1] employed for any certain time, or in any other manner, are to be heard and determined by one or more justice or justices of the peace having jurisdiction in the place where the master shall inhabit. The justices are, in such case, empowered to examine upon oath any artificer, &c., touching any such complaint, difference, or dispute, and to make such order for payment of so much wages, and within such time, as to the justices shall seem just and reasonable; provided that the sum do not exceed five pounds.[2] In case of refusal or non-payment of any sums so ordered by the space of one-and-twenty days next after the determination of the dispute, the justice shall issue his warrant to levy the amount by distress and sale of the goods and chattels of the master or employer, rendering the overplus to the owner or owners after payment of the charges of the distress and sale.

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[1] Dalton *v.* South Eastern Railway Company, 4 C. B. Rep. 296.

[2] Duckworth *v.* Johnson, 33 L. T. 274; 5 Jur. (N. S.) 630.

With regard to complaints by masters against their workmen, it is provided that such justice as aforesaid, upon application or complaint made upon oath by any master or employer against any such artificer, &c., as aforesaid, concerning any misdemeanour, miscarriage, or ill behaviour in such, his, or her service or employment, shall hear, examine, and determine such complaint, and punish the offender by committal to the House of Correction, with hard labour, for a reasonable time not exceeding one calendar month, or otherwise by abating some part of his wages, or by discharging such artificer, &c., from his service, or employment.[3]

In like manner such justice, upon any complaint or application upon oath, by any artificer, &c., as aforesaid, against his master or employer, concerning any misusage, refusal of necessary provision, cruelty, or other ill-treatment of, to, or towards such artificer, &c., may summon such master or employer to appear before him at a reasonable time. The justice or justices shall then examine upon oath into the matter of the complaint, whether the master or employer shall appear or not, and discharge the artificer, &c., of and from his service and employment, which discharge is to be given under the hand and seal, or hands and seals of such justice or justices gratis.[4]

If any person shall think himself aggrieved by such determination, order, or warrant as aforesaid (save and except any order of committal), he may appeal to the next General Quarter Sessions of the Peace, which is empowered to hear and finally determine the appeal, and to award such costs to the appellant or respondent as the sessions shall judge reasonable, not exceeding forty shillings, to be levied by distress and sale.[1] In such case no writ of *certiorari* shall issue to remove the proceedings.[2] Where, however, an order or determination made under 4 Geo. 4. c. 34, relates to the amount of wages that shall appear due to any artificer, &c., it shall be final and conclusive.[3]

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[1] Lowther *v.* Radnor, Earl, 8 East, 113.

[2] 20 Geo. 2. c. 19, § 1; 4 Geo. 4. c. 34, § 5.

[3] 20 Geo. 2. c. 19, § 2.

[4] Ib.

For the better carrying out the above-mentioned provisions, a subsequent statute enacted,[4] that if any of the persons to whom the 20 Geo. 2. c. 19, applies shall contract with any person or persons whomsoever to serve him, her, or them for any time or times whatsoever, or in any other manner, and shall not enter into or commence his or her service according to his or her contract (the same being in writing and signed by the contracting parties), or having entered into such service shall absent himself or herself from the service before the term of his or her contract, whether such contract shall be in writing or not in writing, shall be completed; or neglect to fulfil the same; or be guilty of any other misconduct or misdemeanour in the execution thereof; any justice of the peace of the county or place where the person so offending shall have so contracted, or be employed or be found, upon complaint on oath by the person with whom the contract shall have been made, or by his, her, or their steward, manager, or agent, is empowered to issue his warrant for the apprehension of every such person, and to examine into the nature of the complaint. If the offence charged be proved to the satisfaction of such justice, he shall commit the offender to the House of Correction to hard labour for a reasonable time not exceeding three months, and abate a proportionable part of his or her wages for and during the period of confinement; or in lieu thereof the justice may punish the offender by abating the whole or any part of his or her wages, or discharge him or her from the contract, service, or employment, which discharge shall be given under the hand and seal of the justice gratis.

It frequently happens that the employers reside at considerable distances from the parishes or places where their business is carried on, or are occasionally absent for long periods of time, either beyond the seas or at considerable distances from their places of business, and during the time intrust their business to the management or superintendence of agents, foremen, or managers; in such cases it is provided[5] that any justice or justices of the county or place where the servant, handicraftsman, miner, collier, keelman, pitman, glassman, potter, labourer, or other person or apprentice shall be employed, upon the complaint of such servant, &c., touching or concerning the non-payment of his or her wages, is or are to summon the steward, agent, bailiff, foreman, or manager, and to hear and determine the matter of the complaint in such and the like manner, as complaints of the like nature against any master or employer are directed to be heard and determined by the first above-mentioned acts, and may also make an order for the payment by such steward, manager, &c., of so much wages as to the justice or justices shall appear justly due, provided that the sum which is in question do not exceed ten pounds. If the money be not then paid within the space of twenty-one days from the date of the order, a warrant may be issued to levy the amount by distress and sale of the goods of the master or employer, the overplus, after defraying the charges of the distress and sale, being rendered to the owner of the goods or to his steward or agent, &c.

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[1] 20 Geo. 2. c. 19, § 5. [2] Ib. § 6. [3] 4 Geo. 4. c. 34, § 5.
[4] 4 Geo. 4. c. 34, § 3. [5] Ib. § 4.

Under the 4 Geo. 4. c. 34, § 3, a porter was convicted and sentenced to imprisonment for leaving a service before the time of contract had expired. After his term of imprisonment had expired, but before the original time of contract had expired, he not having returned to the service, was again convicted of having absented himself. Upon a motion for a writ of *habeas corpus* to bring up the body of the prisoner, it was held that the second conviction was good, as the contract continued notwithstanding the first conviction and imprisonment. The following points also arose in the case. The conviction did not expressly state that the servant had entered the service, but it found that he did "misconduct himself in his said service;" and this it was held was a sufficient finding that he had entered into the service. It also stated that it appeared to the magistrate as well on the examination on oath of "M." in presence of the party charged "as otherwise," that the party had absented himself, &c.; and it was held that it was not to be inferred from this that the justice had proceed upon evidence not given in the presence of the party. It further stated that the party misconducted himself, &c., "by neglecting and absenting himself from his said master's service," and this, it was held, was not a finding of two statutable offences, but only of the absenting.[1] Subsequently a writ of *habeas corpus* in the Court of Exchequer was obtained; and on the prisoner being brought up, the Court ordered him to be discharged, the majority of the Court (Pollock, *C. B.*, Martin and Bramwell, *BB.*, dissentiente Watson, *B.*), holding that the conviction was bad for not adjudicating any abatement of wages. Pollock, *C.B.*, also held that the contract was put an end to by the first conviction, and that there could be no second conviction; *dissentientibus*, Bramwell and Watson, *BB.*; *dubitante* Martin, *B.*: Bramwell and Watson, *BB.*, held the objections that there was no allegation of entering the service, and that the conviction appeared to have been taken in evidence not given in the presence of the prisoner, invalid.[1]

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[1] *Ex parte* Baker, 7 El. and Bl. 697; 26 L. J. (N. S.) M. C. 193; 3 Jur. (N. S.) 514.

With regard to proceedings against an infant for a violation of his contract of hiring, in a case relating to the settlement of a pauper,[2] Abbot, *C.J.*, said the contract of an infant, made for his own benefit, according to general principles of law, is not void, but voidable only at the election of the infant; and *per* Bayley and Littledale, *JJ.*, in the same case, an infant may make a contract for his own benefit; he may therefore make a contract for hiring and service, for that will be beneficial to him. It will give him a right to sue for wages. If he does not perform his contract, although no action may lie against him, he will be liable to the statutable regulations applicable to masters and servants. But where a rule had been obtained to quash a conviction, under the 4 Geo. 4. c. 34 (Masters and Servants Act), it appeared that the infant had entered into a contract whereby he agreed to enter into the service of a master for twelve months, at certain weekly wages, and to serve him at all times during that term, and to work fifty-eight hours a week; and in which there was a provision that in case the steam-engine should be stopped from accident, or any other cause, that the master should retain all wages of the servant during that time: it was held that the agreement was void as against the infant, and that a conviction for absenting himself from his master's service could not be supported. An agreement to serve for wages Lord Denman, *C.J.*, said, may be for the infant's benefit; but an agreement which compels him to serve at all times during the term, but leaves the master free to stop his work and his wages whenever he chooses to do so, cannot be considered as beneficial to the servant. It is inequitable, he added, and wholly void.[3] The point as to the competency of an infant to abandon a contract which was for his benefit, was raised in another case,[4] and the Court seemed to entertain a strong impression that the infant could not abandon the contract; no decision, however, was given, as the case went off on another point.

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[1] *In re* Baker 2 H. and N. 219.

[2] Rex *v.* Chillesford, 4 B. C. 94; 3 L. J. K. B. 148.

[3] Reg. *v.* Lord, 12 A. and E. 757; 17 L. J. M. C. 181.

[4] Wood *v.* Fenwick and others, 11 L. J. M. C. 127; 10 Mee. and W. 195.

There is no appeal to the sessions against an order made under the 4 Geo. 4. c. 34, § 5, for payment of wages, the sum to be levied by distress in case of non-payment for nineteen days, although the justices, on making the order, may have acted without jurisdiction;[1] and *semble* an order for payment of wages may be made under § 5 of 4 Geo. 4. c. 34, where, by the contract of service, the wages are to be paid partly in money and partly in goods.

Services, however long continued, create no claim for remuneration without a bargain for them, either express or implied from circumstances showing an understanding on both sides, that there should be payment.[2] Moreover, if a workman contract to supply labour, it must be taken to mean that the labour shall be of the quality which would be bestowed by a workman of ordinary skill in his trade or particular calling.[3]

Again, where a skilled labourer is hired in the way of his calling he impliedly contracts, that he has skill reasonably competent for the performance of the task, and an express undertaking or promise to that effect is not necessary. If afterwards he turns out to be incompetent, his employer may at once rescind the contract of hiring, and discharge him.[4]

There must be mutuality, either expressed or implied, in a contract, to make it binding on either party, and it must not be in the unlawful restraint of trade. The following are instances of implied mutuality:—A person contracted to furnish another with a reasonable quantity of work at a fixed rate of wages, and the other person was bound not to work for any other person or persons for a period of seven years.[5] It was held that there was a mutuality of contract implied, and that the master would be bound to furnish work for the whole period of seven years. Again, the plaintiffs agreed in writing with the defendant that he should serve them for seven years as a crown glass-maker; that he should not during that term work for any other person without their license; that they might deduct from his wages any fine he might incur for breach of their rules; that during any depression of trade he should be paid a moiety of his wages; that if he should be sick or lame, the plaintiffs should be at liberty to employ any other person in his stead, without paying him any wages; that the plaintiffs should pay him, so long as he should be employed and work as a crown glass-maker, certain wages by the piece, and 8*l.* a year in lieu of house-rent and firing; and that the plaintiffs should have the option of dismissing him from their service on giving him a month's notice or a month's wages. This agreement was held to bind the plaintiffs to employ the defendant during the seven years, subject to the power of dismissal; that there was therefore a good consideration for the contract to serve for seven years, and that it was not in unlawful restraint of trade.[1]

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[1] Reg. *v.* Bedwell, 4 El. and Bl. 213; 24 L. J. M. C. 17; 1 Jur. (N. S.) 306.

[2] Reeve *v.* Reeve, 1 F. and F. 280.

[3] Cousins *v.* Paddon, 4 Dowl. P. C. 488.

[4] Harmer *v.* Cornelius, 4 Jur. (N. S.) 1110; C. P. 28 L. J. (N. S.) C. P. 85.

[5] Hartley *v.* Cummings, 2 Car. and K. 433.

When workmen are hired for a year, at a particular trade, under written agreements, which are silent as to any periods of absence allowed to the workmen, parol evidence may be given that it is the custom of the particular trade for the workmen employed in it to take certain holidays, and to absent themselves on such occasions from their work without the permission of their masters.[2]

Where a trade is regulated by committees of the masters and workmen respectively, which committees make rules from time to time, and if by one of such rules, in case of dispute between a master and his men, an arbitration committee, presided over by a barrister, is to decide; and a particular dispute has been so decided, such decision is not to be considered as imported into all future engagements between masters and men, nor is it binding on persons not parties to that particular reference.[3]

An artificer who, in the exercise of his right of lien, detains a chattel upon which he has expended his labour and materials, has no claim against the owner for taking care of the chattel while so detained. This principle is well illustrated by the following case:—A shipwright received a ship into his dock to be repaired (no separate charge being made for the use of the dock during the repairs), and the repairs being complete, he detained the ship in the dock until the charges were paid, giving notice to the owner that he should demand 21*l.* a day for the use of the dock during the detention; and an action being brought, it was held that the shipwright was not entitled, in the absence of any usage of the trade, to any payment for dock-room during the detention of the ship under his right of lien on it for the sum due for the repairs.[4]

[1] Pilkington *v.* Scott, 15 M. and W. 657.

[2] Reg. *v.* Stoke-upon-Trent, 13 L. J. M. C. 41; 8 Jur. 34.

[3] Levey *v.* Hill, 3 H. and N. 702; 27 L. J. Exch. 259; 4 Jur. (N. S.) 589; in the Exch. Ch. affirming judgment of Exch. 3 H. and N. 7; 4 Jur. (N. S.) 286.

[4] British Empire Shipping Company *v.* Somes, 27 L. J. Q. B. 397; 4 Jur (N. S.) 893, affirmed in error from Q. B.; 5 Jur. (N. S.) 675.

A declaration in trover for carpenter's tools alleged special damage in the following terms :—"By means whereof the plaintiff was prevented working at his trade of a carpenter for a long time, to wit, &c.; the said goods and chattels being the working tools and implements of trade of the plaintiff, and was, and is, by means of the premises, greatly impoverished." At the trial the plaintiff had a verdict for 20*l.*, 10*l.* being given by the jury as the value of the tools, and 10*l.* for the damage sustained by the plaintiff by the detention of them. Subsequently, on a motion for a new trial, or why the damages should not be reduced to 10*l.*, on the ground that the damages in an action of trover must be limited to the value of the things taken, and that no special damage is in such case recovered, it was held that special damage may be recovered in trover, and that it was properly laid in the case.[1] It would seem, therefore, in such a case, that if the tools, the conversion of which is complained of, are restored before the trial, that the action may go on for the special damage only.

X.

COMBINATIONS OF MASTERS AND OF WORKMEN.

It is now necessary to advert to the provisions of the law with respect to the combination of masters and of workmen, the fixing the wages of labour, and deterring workmen from work which are contained in the 6 Geo. 4. c. 129. Such combinations are in the language of the statute "injurious to trade and commerce, dangerous to the tranquillity of the country, and especially prejudicial to the interests of all who are concerned in them;" it is, therefore, in a work which is addressed to a class which is one of the largest employers of workmen, necessary that the law upon the subject should be fully and clearly explained.

The principle of combination among working men for fair and legitimate ends was conceded by the Legislature in later times in a spirit of enlightened consideration and forbearance towards the industrial community at large; and that concession enables them, by means of trade societies, to make laws or bye-laws to control the members of those societies, but not to force workmen who do not belong to the particular society to adopt and act upon their rules of trade. The abuse of this principle of toleration conceded by the Legislature is on every account to be deprecated. Every man, it is well said, has a right to work for the best price he can get; but if others choose to work for less than the usual price, the law will not permit that violence should be committed towards them, or towards those by whom they are employed, or those with whom they are connected.[1] The law allows of combination about the terms of labour among persons present or assenting to the combination; but no one is at liberty, either in law or in justice, to exert combined powers against the freedom of others. If, therefore, the persons combining conspire to control the proceedings of others, or to control the proceedings of one or more of themselves who may subsequently dissent from the object for which the combination was formed, such persons will be guilty of an indictable offence and be subject to severe punishment, if convicted. The combination laws do not in any way touch trades unions, which are perfectly lawful in themselves; but the moment that those unions step in, and by means which the law does not sanction, seek to tyrannize over workmen unconnected with them, and to drive them by intimidation and persecution into the observance of the rules and usages of the union, the law also steps in to restrain by severe measures their illegal proceedings.

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[1] Bodley *v.* Reynolds, 15 L. J. Q. B. 319; 10 Jur. 310.

The object of the Act above referred to is declared to be to make provision, as well for the security and personal freedom of individual workmen in the disposal of their skill and labour, as for the security of the property and the persons of masters and workmen. No one therefore has any right to dictate to another as to the terms on which he will accept work; on the contrary every workman has a perfect right to make any contract with his employer as to the terms of his employment which he may think fit to enter upon; and on the other hand every employer of labour has a right to make his own terms with those who may be willing to enter into his service; and both will be equally protected by the law in so doing.

The following are the offences against which the Act is directed: —If any person shall by violence to the person or property, or by threats or intimidation, or by molesting or in any way obstructing another, force or endeavour to force any journeyman, manufacturer, workman, or other person hired or employed in any manufacture, trade, or business, to depart from his hiring, employment, or work, or to return his work before the same shall be finished, or to prevent or endeavour to prevent any journeyman, manufacturer, workman, or other person, not being hired or employed, from hiring himself to, or from accepting work or employment from any person or persons; or if any person shall use or employ violence to the person or property of another, or threats or intimidation, or shall molest, or in any way obstruct another for the purpose of forcing or inducing such person to belong to any club or association, or to contribute to any common fund, or to pay any fine or penalty, or on account of his not belonging to any particular club or association, or not having contributed or having refused to contribute to any common fund, or to pay any fine or penalty, or on account of his not having complied or of his refusing to comply with any rules, orders, resolutions, or regulations, made to obtain an advance or to reduce the rate of wages, or to lessen or alter the hours of working, or to decrease or alter the quantity of work, or to regulate the mode of carrying on any manufacture, trade or business, or the management thereof; or if any person shall by violence to the person or property of another, or by threats or intimidation, or by molesting or in any way obstructing another, force or endeavour to force any manufacturer or person carrying on any trade or business to make any alteration in his mode of regulating, managing, conducting, or carrying on the same, or to limit the number of his apprentices, or the number or description of his journeymen, workmen, or servants:

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[1] Rex v. Batt, 6 C. and P. 329.

Every person offending in any of the above-mentioned respects, or aiding, abetting, or assisting therein, being convicted thereof, shall be imprisoned only, or shall and may be imprisoned and kept to hard labour, for any time not exceeding three calendar months.

In proceedings in respect of any of the above-mentioned offences, the prosecutor must prove acts of violence, threats, intimidation, molesting, or obstructing, or facts from which any of these may be reasonably implied—the purpose for which the threats, &c., were made, and that the workman did in consequence leave his employment, or did not hire himself, or that the manufacturer was in consequence of the threats, &c., forced to alter his mode of carrying on business, or to limit the number of his apprentices. In an indictment for conspiring to commit an offence prohibited by the statute, it will be sufficient to use the words of the statute, although they may be words of a general description; for such a count will be sufficiently certain, even though the manner in which the molestation was to be effected is not stated.[1]

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[1] Reg. v. Rowlands and others, 17 A. & E. 671; 21 L. J. (N. S.) M. C. 81; 16 Jur. 268; 2 Den. C. C. 364.

The prohibitions above mentioned, however, do not extend to subject any persons to punishment who shall meet together for the sole purpose of consulting upon and determining the rate of wages or prices which the persons present at such meeting or any of them shall require or demand for his or their work, or the hours or time for which he or they shall work in any manufacture, trade, or business, or who shall enter into any agreement, verbal or written, among themselves for the purpose of fixing the rate of wages or prices which the parties entering into such agreement or any of them shall require or demand for his or their work, or the hours or time for which he or they will work, in any manufacture, trade, or business;[1] neither does the statute extend to subject any persons to punishment who shall meet together for the sole purpose of consulting upon and determining the rate of wages or prices which the persons present at the meeting, or any of them, shall pay to his or their journeymen, workmen, or servants, for their work, or the hours or time of working in any manufacture, trade, or business, or who shall enter into any agreement, verbal or written, among themselves for the purpose of fixing the rate of wages or prices which the parties entering into such agreement, or any of them, shall pay to his or their journeymen, workmen, or servants, for their work, or the hours or time of working in any manufacture, trade, or business.[2]

By a subsequent statute it is enacted that where any person shall be charged with and convicted of any assault committed in pursuance of any conspiracy to raise the rate of wages, the Court may sentence the offender to be imprisoned, with or without hard labour, in the common gaol or house of correction, for any term not exceeding two years, and may also (if it shall so think fit) fine the offender, and require him to find sureties for keeping the peace.[3] By another Act power is given to the Court to order payment of the costs and expenses of the prosecutor and witnesses for the prosecution, together with a compensation for their trouble and loss of time, in the same manner as in cases of felony; and although no bill of indictment be preferred, the Court, where any person shall have *bonâ fide* attended the Court in obedience to a recognizance, may order payment of the expenses of such person, together with a compensation for his or her trouble and loss of time in the same manner as in cases of felony.[4]

All and every person and persons who shall or may offend against the Act, shall and may, equally with all other persons, be called upon and compelled to give his or her testimony and evidence as a witness or witnesses on behalf of the Crown, or of the prosecutor or informer upon any information made or exhibited under the Act against any other person or persons. In all such cases, every person having given his or her testimony or evidence shall be and is indemnified of, from, and against any information to be laid or prosecution to be commenced against him or her, for having offended in the matter wherein or relative to which he, she, or they shall have given such testimony or evidence.[1]

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[1] 6 Geo. 4. c. 129, § 4.

[2] 6 Geo. 4. c. 129, § 5.

[3] 9 Geo. 4. c. 31, § 25.

[4] 7 Geo. 4. c. 64, § 23.

For the more effectually enforcing and carrying into execution the provisions of the Act, on complaint and information on oath before one or more justices of the peace, of any offence having been committed against the Act, and within six calendar months before the complaint or information shall be made, such justice or justices are authorized and required to summon the person or persons charged with being an offender or offenders against the Act; and if they fail to appear, warrants may be issued for their apprehension; or if they be proved on oath to have absconded, they may be convicted though not appearing.[2] Any person convicted under the Act is at liberty to appeal to the next general Court of Quarter Sessions on entering into a recognizance to prosecute his appeal with effect, and to be forthcoming, to abide the judgment and determination of the Sessions, and pay such costs as shall be awarded.[3]

It is necessary to add that no justice of the peace, being also a master in the particular trade or manufacture in or concerning which any offence is charged to have been committed under the Act, shall act as such justice under the Act.[4]

Different decisions having been given on the construction of the 6 Geo. 4. c. 129, it has since been provided by an Act passed to protect the working-man,[5] that no workman or other person, whether actually in employment or not, shall by reason merely of his entering into an agreement with any workman or workmen, or other person or persons, for the purpose of fixing or endeavouring to fix the rate of wages or remuneration at which they or any of them shall work, or by reason merely of his endeavouring peaceably and in a reasonable manner, and without threat or intimidation, direct or indirect, to persuade others to cease or abstain from work in order to obtain the rate of wages, or the altered hours of labour so fixed or agreed upon, or to be agreed upon, shall be deemed or taken to be guilty of "molestation" or "obstruction," within the meaning of the 6 Geo. 4. c. 129, and shall not therefore be subject or liable to any prosecution or indictment for conspiracy; but nothing contained in the 22 Vict. c. 34, shall authorize any workman to break or depart from any contract, or authorize any attempt to induce any workman to break or depart from any contract.

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[1] 6 Geo. 4. c. 129, § 6.

[2] 6 Geo. 4. c. 129, § 7.

[3] Ib. § 12.

[4] Ib. § 13.

[5] 22 Vict. c. 34, § 1.

From the foregoing provisions of the law, it will be seen that workmen have a right to dictate their own terms to the masters, or to combine on their own account, and to refuse to work if those terms be not conceded; but that third persons have no right to obstruct or intimidate workmen, either hired or about to be hired, so as to prevent them from working, unless they agreed to the terms proposed by such third persons. If one person do so, he may be proceeded against under the statute; and if several conspire to do so, they may be indicted for a conspiracy to injure the person in his trade against whom they have conspired; for an agreement to commit an indictable offence, or one punishable by summary conviction, amounts to an indictable conspiracy. In an indictment for conspiring to commit the several acts prohibited by the statute relating to the combination of workmen,[1] the Court not only held the indictment to lie at Common Law, but that the incidents of fine and imprisonment, as the penalty of a misdemeanour, would attach, though far exceeding the punishment of three months' imprisonment.[2] It follows, therefore, that an agreement to commit such an act may be punished far more severely than if it be actually committed by one only; and such an agreement amounts to a conspiracy to violate an Act of Parliament, which is an offence at Common Law.

Combinations, whether on the part of workmen to increase, or of masters to lower wages, were illegal at Common Law. Though the Legislature has made combinations of workmen, or "strikes," for the purpose of raising wages, or of masters for the purpose of lowering the rate of wages, or of regulating the hours of labour, or simply for maintaining things as they are, dispunishable at law, no legal effect is thereby given to them. Whatever obligations an individual who may have joined the combination, may enter into to continue in it for a given time, or so long as a majority shall require, are not enforceable by a suit at law, or otherwise, inasmuch as it would be contrary to public policy to enforce an obligation for which there is no good consideration. This is illustrated by a case in which a bond was made by eighteen persons, in which each obligor was described as a cotton-spinner, of Wigan, of Hindley, in Lancashire, by which each was separately bound to Caleb Hilton, attorney-at-law, in 500*l.*, subject to the condition—that the obligees were respectively owners of spinning-mills in Wigan and Hindley, and employed in them many workpeople; that there were societies and combinations among divers persons, whereby persons, otherwise willing to be employed, were deterred, by fear of social persecution and other injuries, from hiring themselves to work, and whereby the legal control of the obligees of their property was injuriously interfered with; that these combinations were sustained by funds arbitrarily levied and extorted by way of tax or rate on the persons employed by and receiving wages from the obligees; and in the opinion of the obligees it had become necessary to take measures for vindicating their legal rights to the control of their property, which would also best sustain the rights of the labourer to the free disposal of his skill and industry; therefore the obligees had agreed to carry on their works, in regard to the amount of wages, the times of the engagement of workpeople, the hours of work, the suspending of work, and the general discipline and management of their works in conformity to law, for twelve calendar months, in conformity with the resolutions of a majority of the obligees present at any meeting to be convened; that for the purpose of carrying the agreement into effect, the obligees entered into the bond; and the condition was, that if the obligees for twelve calendar months should carry on, or wholly or partially suspend carrying on their works, in regard to the matters aforesaid, in conformity with the resolutions of a majority of the obligees present at a meeting to be held as mentioned, then the bond as to each person so performing to be void; and the days, place, and other circumstances of the proposed meeting were set out; the obligor to hold the money recovered, in trust, for all the obligees, with power to a majority of the obligees present to release the obligees from performance of the conditions of the bond. An action having been brought on this bond against one of the obligees, it was held by the Court of Queen's Bench, and affirmed in the Exchequer Chamber, that the bond was void, as being in restraint of trade *primâ facie.* Alderson, *B.*, said, in delivering the judgment of the Court of Error, "It is the privilege of a trader in a free country, in all matters not contrary to law, to regulate his own mode of carrying on his trade according to his own discretion and choice. If the law has in any matter regulated or restrained his mode of doing this, the law must be obeyed. But no power short of the general law ought to restrain his free discretion. Now here the obligees to this bond have clearly put themselves into a situation of restraint."[1]

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[1] 6 Geo. 4. c. 129.

[2] Reg. *v.* Duffield, 5 Cox, C. C. 404; Reg. *v.* Rowlands and others, 12 A. and E. 671; 21 L. J. (N. S.) M. C. 81; 16 Jur. 268; 2 Den. C. C. 364.

This chapter may be fitly concluded by the following quotation from the direction of Erle, *C.J.*, to the jury in the case of Reg. *v.* Rowlands and others, *supra.* "The law," he said, "is clear that workmen have a right to combine for their own protection, and to obtain such wages as they choose to agree to demand. I say nothing at present as to the legality of other persons, not workmen, combining with them to assist in that purpose. As far as I know there is no objection, in point of law, to it; and it is not necessary to go into that matter; but I consider the law to be clear so far, only, as while the purpose of the combination is to obtain a benefit for the parties who combine; a benefit which by law they can claim. I make that remark because a combination for the purpose of injuring another is a combination of a different nature, directed personally against the party to be injured; and the law allowing them to combine for the purpose of obtaining a lawful benefit to themselves gives no sanction to combinations which have for their immediate purpose the hurt of another. The rights of workmen are conceded; but the exercise of free will and freedom of action within the limits of the law, is also secured equally to the masters. The intention of the law is at present to allow either of them to follow the dictates of their own will with respect to their own actions and their own property; and either, I believe, has a right to study to promote his own advantage, or to combine with others to promote their material advantage." His lordship then went on to say that in this case, upon undisputed evidence there had been a combination to force the prosecutors to agree to a uniform book of prices; that upon the facts before the jury they would have to give their opinion upon three classes of counts charging conspiracies: first, to prevent workmen from working for the prosecutors by intimidating the workmen; second, to force the assent of the prosecutors to certain alterations by intimidating the prosecutors; third, to induce workmen to leave the prosecutors' employment, contrary to their contract; and he stated that, if the jury thought these counts sustained by the evidence, they should convict upon them. He then went on to say, "But supposing any of the defendants are acquitted as to all those classes, and you should still be of opinion that a combination existed for the purpose of obstructing the prosecutors in carrying on their business, and forcing them to consent to this book of prices, and in pursuance of that concert, they persuaded the free men and gave money to the free men to leave the employment of the prosecutors, the purpose being to obstruct them in their manufacture and to injure them in their business, and so to force their consent, with no other result to the parties combining than gratifying ill-will, I am of opinion that that would also be a violation of the law, and warrant a conviction upon the counts directed against that form of offence." The above directions, it should be added, afterwards met with the full concurrence of the Court.

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[1] Hilton *v.* Eckersley, 6 El. and Bl. 47.

XI.

THE TRUCK SYSTEM.

It is now necessary to advert to the provisions of the 1 and 2 W. 4. c. 37, known as the "Truck Act," which prohibits the payment in certain trades of wages in goods, or otherwise than in the current coin of the realm; and renders null and void any contract which provides that the whole or any part of the wages of any artificer in any of the trades to which the Act applies, shall be made payable in any manner other than in the current coin of the realm; as well as any contract which provides directly or indirectly respecting the place where, or the manner in which, or the person or persons with whom, the whole or any part of the wages due, or to become due, to any artificer, shall be laid out or expended. The Act requires that all wages shall be paid to the workmen in the current coin, and declares payment in goods to be illegal, null, and void. It also enables the artificer to recover from his employer the whole or so much of the wages earned as shall not have been actually paid to him by his employer in the current coin, against which no set-off in respect of goods supplied shall be allowed. Moreover, the employer cannot recover the value of goods supplied contrary to the Act; and if the artificer's wife or children (not being of the full age of twenty-one years) become chargeable to the poor rates, the overseers may recover from the employer any wages earned within the three months preceding the chargeability and not paid in cash.

Any employer of any artificer who shall, by himself or by the agency of any other person or persons, directly or indirectly enter into any contract or make any payment declared illegal by the Act, for the first offence is liable to a penalty not exceeding 10*l.* nor less than 5*l.*; for the second offence, any sum not exceeding 20*l.* nor less than 10*l.*; and for the third offence shall be declared guilty of a misdemeanour and punishable by fine at the discretion of the Court; so that the fines shall not in any case exceed 100*l.* Partners are not however to be liable in person for the offence of their co-partner; but nevertheless the partnership property is liable for the penalty, which may be recovered by distress and sale of the goods of the co-partnership.

The following are the trades in connexion with the subject of this work to which the Act applies;

The making, casting, converting, or manufacturing of iron or steel, or any parts, branches, or processes thereof;

The working or getting of any mines of coal, ironstone, limestone, salt rock; or in or about the working or getting of stone, slate, or clay; or the making or preparing of salt, bricks, tiles, or quarries;

The making or manufacturing of any kinds of nails, chains, rivets, anvils, vices, spades, shovels, screws, keys, locks, bolts, hinges, or any other articles of hardware made of iron or steel, or of iron and steel combined; or of any plated articles of cutlery, or of any goods or wares made of brass, tin, lead, pewter, or other metal, or of any japanned goods or wares whatsoever;

The making or otherwise preparing, ornamenting, or finishing of any glass, porcelain, china, or earthenware whatsoever, or any parts, branches, or processes thereof, or any materials used in any of these trades or employments.

The provisions of the Act do not extend to any domestic servant or servant in husbandry, and particular exemptions are made to the generality of its enactments.

The provisions of the Truck Act apply only to agreements for personal services; and the distinction between contractors and artificers depends upon the fact whether by the engagement they were labourers within the meaning of the Truck Act 1 & 2 W. 4. c. 37; therefore persons who engage to do certain work at per yard, as butty colliers,[1] and employ others under them to increase the quantity, and must themselves work personally, and are treated as workmen, are within the Act; the distinction between contractors and artificers depending on the fact whether by the engagement they were labourers;[1] it would, however, be different if the persons were not bound by contract to do any part of the work personally.[2] It seems, however, to be doubtful whether if they were bound to labour personally, but were at liberty to hire labourers to assist them, they would be within the Act. The rule is, that the person to be an "artificer" within the meaning of the Act, must contract to do the work himself—that is, give his personal services (but not necessarily manual services), for which he is to be paid wages;[3] and therefore a person who merely contracts to procure the work to be done is not such an artificer, although, in fact, he assists in doing the work himself.[4]

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[1] The "Butty" is a contractor or middleman between the master and the men. He has under him an agent called the "doggy," who superintends the work in the butty's absence.

Moreover, the provisions of the Truck Act do not apply to agreements for the performance of a certain quantity of work which the contractor cannot perform except by making use of the labour of others;[5] and the mode of paying wages as specified in the agreement will not prevent a case from coming within the Act.

The 19th section, which contains the specification of trades, is, as before observed, applicable only to those persons who contract as labourers—viz., such as contract to use their personal services, and to receive payment for such services in wages; therefore a person who contracted as a sub-contractor to make a cutting on a projected line of railway at a certain sum per cubic yard, and employed others with whom he himself worked in making the cutting, was not a "workman or labourer" within the meaning of the section. In an action for such work and labour, the defendants are not deprived of their right of set-off for goods sold and delivered.[6]

The facts of the above-mentioned case, as they appeared at the trial, were as follows:—The defendants had contracted with a railway company to make a portion of their intended line, and the plaintiff had engaged with the defendants to do a portion of the work they had undertaken, consisting of a cutting which he engaged to make at a certain sum per cubic yard. He employed several men who worked with him in making the cutting, and he received from the defendants from time to time tickets for goods which he gave to his men as wages, and for which they received value in goods from the defendants. It was proved that a quantity of the earth removed in order to form the cutting was clay, which was deposited in a particular spot, and was used by the defendants in manufacturing bricks for their works on the line. At the trial, Coleridge, *J.*, told the jury that if they thought the defendants had in view the removal of the clay for the purpose of making bricks, that part of the case came within the meaning of the 19th section; but he directed them to find a verdict for the defendants on the plea of set-off, which was proved, inasmuch as he thought the Act did not apply to the case of a sub-contractor, and he gave the plaintiff leave to move.

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[1] Bowers *v.* Lovekin, 6 El. and Bl. 584; 25 L. J. Q. B. 371; 2 Jur. (N. S.) 1187.

[2] Ingram *v.* Barnes, 7 El. and Bl. 115, 132; 26 L. J. Q. B. 82, 339; 3 Jur. (N. S.) 15, 861.

[3] Riley *v.* Warder, 2 Exch. 59; 18 L. J. Exch. 120.

[4] Sharman *v.* Sanders, 22 L. J. C. P. 86; 17 Jur. 765; Sharman *v.* Union Iron Works Company, 3 Car. and K. 298.

[5] Floyd *v.* Weaver, 21 L. J. Q. B. 151; 16 Jur. 289.

[6] Riley *v.* Warder, *supra.*

The following is an illustration of what will amount to payment of wages contrary to the Truck Act:—An artificer to whom wages were due was paid by his master by means of a note for payment in goods, the master knowing that the payment would be made in goods, and not in the current coin of the realm. The agent of the master delivered the goods in obedience to the note, and the master was convicted before the justices of an offence under the 1 & 2 W. 4. c. 37. Although the place where the goods were delivered was not within the jurisdiction of the justices, on a case stated by the justices for the opinion of the Court of Queen's Bench, it was held that the conviction was right, as under the circumstances the offence was complete when the note was given.[1]

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[1] Ashlersmith *v.* Drury, 28 L. J. M. C. 5.

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